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DAILY EDITION

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WE GUARANTEE that of this issue more than 9,200 copies were printed; that of those more than 9,200 copies, 7,048 were mailed to regular paid subscribers, 200 were provided for counter and news companies' sales; and 1,700 were printed for distribution at Atlantic City and for use as sample copies.

IN the abstract, every railroad should build good cars and keep them in good repair, and the Master Car Builders' Association apparently proposes to do all it can to see that they do it. All the members that have investigated the subject carefully seem to find that it is costing them decidedly more to have their cars repaired away from home, although the prices allowed are, in some case, claimed to be below the actual cost. The extension of the list of owner's defects each year makes the total continually increase and the great advantage of having the highest class of equipment, properly maintained, is beginning to be more thoroughly appreciated. The eliminattion of the requirement of applying a repair card will also tend to increase the tendency toward better repairs.

AT the closing session of the Master Mechanics' convention last week a letter was read from a committee of the International Railroad Master Blacksmiths' Association asking the members of the M. M. Association to send their blacksmith foremen to the convention which meets at Richmond, Va., August 18. F. F. Gaines spoke in favor of the idea and asked for a closer co-operation with the smaller and more highly specialized mechanics' association. He had found that such of his foremen as attended the different conventions returned home with a supply of good ideas, which, when put into practice, saved more money than it cost to send the delegates to the conventions. There can be little question on the part of those who are accustomed to attending the meetings of these associations, but that Mr. Gaines is right and that the railroads generally should adopt the policy of their progressive roads which not only allow their men to attend such conventions, but encourage them to do so, there can be no question. It might be a good idea to require a report from each foreman on those features that had interested him and which he believed could be adopted by his road with good results—this report to be either in written form to his superior or to be presented at one of the foremen's meetings which are now held at regular intervals on many roads. A survey of the situation six months after the convention, with the idea of finding just what results could be credited to the information and inspiration gained from attendance at the convention might reveal some interesting facts.

THERE have been two or three additions made to the official list of enrollment this year that have contributed materially to the value of the list and which have been the subject of much commendation. First in value stands the classification of railway officials by the roads with which they are connected. This has made it possible for those seeking a representative of any road to ascertain who is here, and if the particular man whom it is desired to see is about, to pick the next best from those present. Then the list of exhibitors with their space numbers, and a plan of the pier, and the list of the member companies of the Railway Supply Association have contributed their own quota to the convenience of the list.

THE discussion on the overhead inspection of freight cars yesterday morning was interesting as showing the difficulty of advance inspection whereby one road should attempt to inspect and choose cars for service on a connecting line. The unavailability of the statistics of one road as a means of checking efficiency on another is a matter of common acceptance, and so it is not surprising that the association should balk at the idea of adopting a card that would imply that the standards of one road could be made to guide in the acceptance, by another line, of cars intended for loading with flour or grain. The American Railway Association asked for a report on the subject and a most able one has been presented. Further action will depend on the wishes of that association as the question is largely one of operation. The M. C. B. Association stands ready to co-operate in any way it can.

IN the report on Car Trucks the committee states that the distance of the side bearings from the center line on various types of cars will receive consideration in connection with the design of the standard bolster. In view of the fact that this distance is recognized as having great influence on the riding qualities of tenders, as well as on their liability to a freedom from derailment, it seems that it cannot fail to be of vital importance in the designing of freight cars as well. There is no apparent reason why a box car with a lading of high center of gravity should not have its rail holding qualities influenced in identically the same manner as a tender. To be sure, the distance between truck centers is greater and there are other modifying conditions that may lessen the influence of side-bearing location as a cause of derailment. But the influence or tendency must exist just the same, and it seems as if these could hardly be any subject more worth a careful and thorough investigation than this one of side-bearing location.

THE experiment of keeping the exhibits open at night was tried Monday. It was not a success. Unfortunately, however, the experiment was tried under extremely unfavorable conditions. The M. C. B. Association on that day had both morning and afternoon sessions. The afternoon session lasted until 7 o'clock. The members naturally were very tired after this long day's work; and by the time they had got their dinner it was pretty late. But for these circumstances, doubtless a larger number of railway men would have visited the exhibits on Monday evening. One plan which has been suggested to give the railway men a better oppor-

tunity to visit the exhibits is that of having on each day one session from 10 to 12 a. m. and another from 2 to 4 p. m. It is reasoned that they would then have some time before the morning session began, and also some between the morning session and lunch time, and that as they would be on the Pier attending the afternoon session, they would naturally find it convenient to spend some time among the exhibits following the afternoon session. This is an interesting plan which merits consideration.

MANY prophesies have been made as to the possible length of life of all-steel freight cars, and its estimates have varied over a wide range. Steel freight cars in considerable numbers have now been in service since 1896, and from the observations which have been made of their condition it can safely be said that the life of the floor and hopper sheets will vary from fifteen to twenty years, and that the life of the rest of the car will be double that of the floor sheets, or from thirty to forty years. New floors and hopper sheets can be put in a hopper car at an expenditure of roughly $75 for material and $50 for labor—a total of about $125. When this is done the cars are said to be in practically as good condition as when new. The mistake was made in many of the cars which were designed in the earlier stages of steel freight car development—and in some of the later stages as well—of making the center sill constructions too light and in not using a cover plate or heavy box girder construction. When new floor sheets are applied it is therefore necessary in some cases to reinforce the center sills, but this is not generally the case. Naturally, as the steel cars in service have grown older, and more and more have been built, it has become necessary for roads to provide more extensive facilities for making repairs to them. The steel car shop of the Pennsylvania at Altoona has been doubled in size within the last two years; only about one-quarter of it, however, is used for repairs to old cars, the rest of it being used for the building of new equipment. The Pittsburgh & Lake Erie expects to double the size of its steel car repair shop during the coming summer.

FALSE ECONOMY IN FREIGHT CAR CONSTRUCTION.

IN discussing the proposed retirement from use in interchange service of freight cars of 50,000 lbs. capacity and less, F. W. Brazier stated in a resolution which he introduced that the railroads should start with a good car and then maintain it; and D. F. Crawford later gave it as his belief that if cars are properly repaired there will be little trouble experienced in the abuse of the repair card. There are freight cars of large capacity in service today that are a disgrace to the designers and owners and yet the policy of cutting the first cost down to the last dollar continues on many roads. When cars are intended for operation in long trains and hump yard service, with the heavy locomotives now in general use, they should be given the benefit of the best possible engineering skill and experience; much has been said on this subject, but there are still many railroad managers who will not listen to a proposal to spend even a very few dollars extra per car when they must realize, if they have studied their repair bills and have any confidence in the judgment of their car department officers, that those few dollars would be returned many times over in the reduction of maintenance costs.

It is this false economy employed in first cost that is responsible for a very large percentage of the cases of leaky roofs, broken doors. pulled out drawbars and racked superstructures and broken trucks that are daily causing train delays, overtime and increased car maintenance expenditures. Some cars of this type are known among repair men the country over; these men know that the cars are poorly built and that it is impossible to make repairs on them that will put them in satisfactory condition, and they consequently make only what repairs are absolutely essential, hoping that the cars will then run to their destination. In most cases they do not, but are again marked bad order at the next terminal—if indeed they are not set out along the road—and so it goes on in a succession of delays and temporary repairs.

Every car department man should miss no opportunity to bring home where they are most needed the facts concerning this policy. No opportunity should be neglected, in the Master Car Builders' Association conventions and elsewhere, to overturn this idea of false economy to which some of our railroad officers cling so tenaciously and which is the greatest cause of the enormously increased cost of car maintenance. Cases are not lacking where railroads buy the best locomotives available, and reduce to the last possible cent the expenditure for new cars to be handled by those locomotives, a policy as inconsistent as it later proves expensive.

LOW CAPACITY CARS IN INTERCHANGE.

WHAT the members arguing in favor of the suggestion to retire from interchange service all cars of 40,000 and 50,000 lb. capacity really desire is a reduction in the accidents and delays due to weak equipment in heavy tonnage trains. There is no doubt that this trouble is serious, and immediate steps should be taken to correct it, but it hardly seems that the selection of certain capacity cars for execution is the fair way of doing it. No one objects particularly to their capacity; it is their weakness that is criticised. Certain classes of traffic require cars of 40,000 lb. and 50,000 lb. capacity, and in any case there would have to be exceptions made to any rule of interchange based on capacity. The first motion suggested excepted cars with metal underframes and metal trucks and it was later suggested that refrigerator cars also be excepted. This is but an example of what exceptions would continue to arise when the rule was put in force. It is comparatively simple to build a wooden underframe on short cars of any reasonable strength and simply because it is wood is no indication of weakness. There have been a number of instances where 60,000 lb. and 80,000 lb. steel underframes have been too weak to withstand the shocks received in service. In some cases certain railroads are now refusing to accept some cars in interchange which are marked 60,000 lb. and 80,000 lb. capacity and make it a practice to transfer the loads and send the cars back.

It thus seems that a rule based on capacity when wooden underframes are used does not answer the requirements any better than a rule with no exception. What is really needed is a car that will stand up to the requirements of modern traffic conditions, be its capacity 30,000 lb. or 140,000 lb. This brings up the question of determining a standard minimum strength for freight cars and this in turn largely hinges on the draft gear and its attachments. If such a minimum strength can be specified, cars of the lower capacities can be stenciled and the rules could allow the refusal to accept all cars below 60,000 lb. capacity which are not stenciled as being of the required strength. Improper stenciling would not be difficult to discover and the Arbitration committee could quickly settle the matter.

Metal trucks should be required under all cars offered in interchange and a rule to this effect would cause no great inconvenience or expense to anyone.

The decision of the convention was to refer the whole subject to a committee for investigation and to then refer it, with recommendations, to the American Railway Association. While cars are, of course, built of a capacity and size to suit the requirements of the traffiffic department, their strength and form of construction are entirely within the control of he mechanical department. If no attempt is made to legislate certain capacities out of existence it would seem impossible to settle the question within the Master Car Builders' Association.

TO-DAY'S PROGRAM.

M. C. B. ASSOCIATION

9.30 A. M. TO 1.30 P. M.

Discussion of Reports on:	
Damage to Freight by Unloading Machines	9.30 A. M. to 10.00 A. M.
Air-brake Hose Specifications	10.00 A. M. to 10.30 A. M.
Revision of Present Specifications	10.30 A. M. to 11.30 A. M.
Car Construction	11.00 A. M. to 11.30 A. M.
Unfinished business; Reports of Committees on Correspondence, Resolutions, and such other committees as may be named during the convention	11.30 A. M. to 11.45 A. M.
Election of officers	11.45 A. M. to 1.30 P. M.

Adjournment.

LOST.

A 4 by 5 Premo B camera with film pack has been lost in the Hotel Dennis or on the pier. Five dollars reward will be given if the finder will return to Edward Wray, Advertising Building, Chicago.

CORRECTIONS IN THE DISCUSSION OF THE REVISION OF THE RULES OF INTERCHANGE.

In discussing the letter from the private car lines in connection with the report of the Arbitration committee on the Revision of Rules of Interchange, Monday afternoon, the remarks ascribed to H. Boutet, of the Cincinnati Railways, on page 1456, should have been credited to F. W. Brazier, superintendent of rolling stock of the New York Central & Hudson River.

The final motion in connection with the report of the Arbitration committee on the revision of the rules of interchange was not reported quite accurately yesterday. It was made by C. E. Fuller and should read: "I move that the report of the Arbitration committee be accepted, including the modification of the recommendation of the committee in rule 30 referring to the reweighing and relettering of cars." The motion was carried.

M. C. B. DANCE.

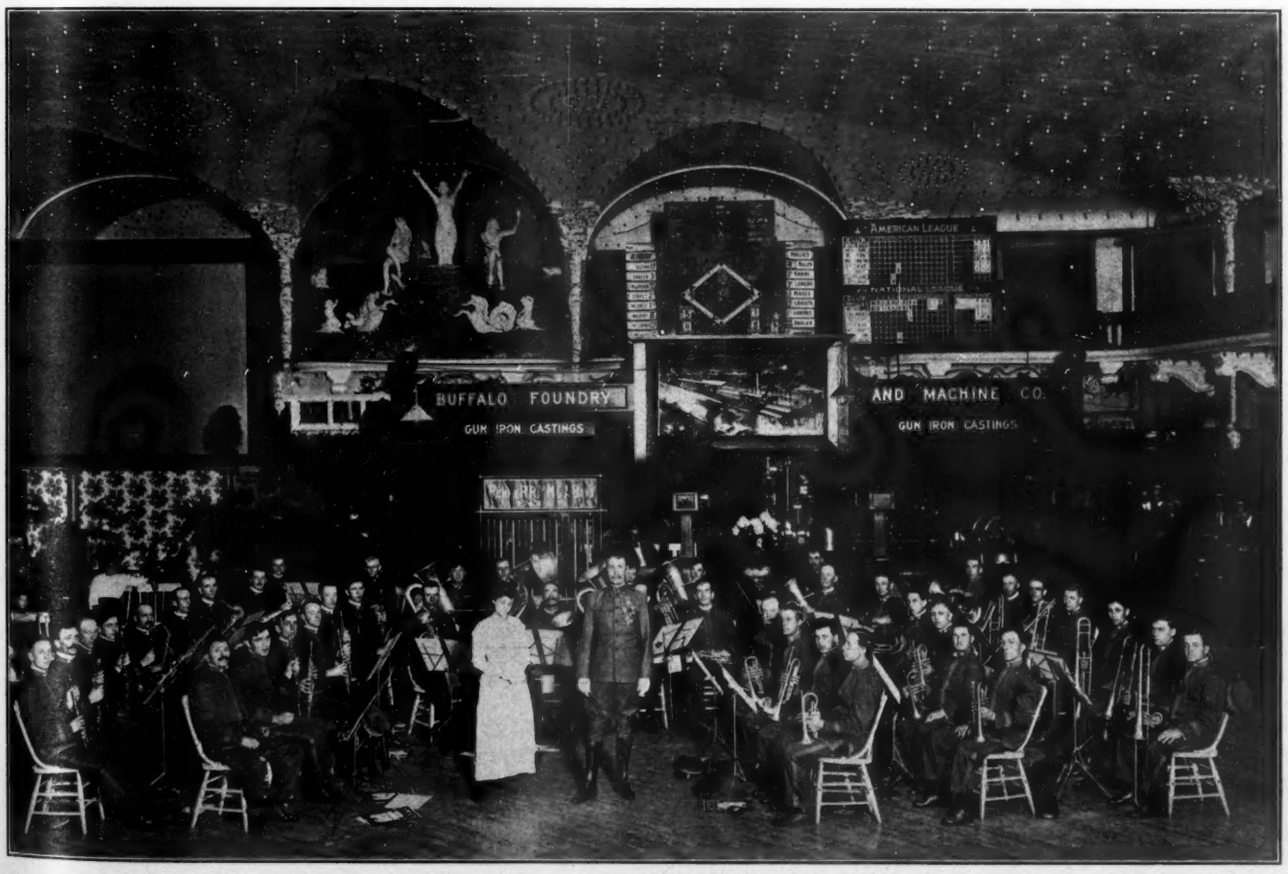
The M. C. B. dance was held last evening in the entrance hall of the Million Dollar Pier, with the following committee in charge: Messrs. Landreth, (chairman), Brotherhood, Ryder, Purcell, Eaton, Donahue, Chaffee, Sheridan and Sherman.

B. & O. CLUB MEETING.

Because of the afternoon session of the Monday meeting of the M. C. B. Association it was necessary to postpone the B. & O. Club meeting from 3.30 to 5.30 P. M., and even then the late session of the association prevented a large attendance at the club meeting. Because of this no action was taken on the report of the committee on constitution and by-laws and it was continued until next year. C. F. Giles was re-elected president and C. L. Sullivan was re-elected secretary.

MR. BRAZIER MISQUOTED ON COUPLERS.

In the discussion of the report on Coupler and Draft Equipment, page 1446 of the June 17 *Daily*, a line was dropped in the print shop from the remarks of F. W. Brazier, making one of the sentences incomplete. In commenting upon the fact that it was about time to adopt a standard coupler, Mr. Brazier stated that there were now 433 different patents of couplers in use on the railways of this country, and asked, "Is it not time that we got down to a standard coupler?"



PENNSYLVANIA RAILROAD Y. M. C. A. BAND, OF ENOLA, PA., COMPOSED ENTIRELY OF SHOPMEN OF THE P.R.R.

PRESENTS FOR ENTERTAINMENT CHAIRMAN KREPPS.

Shortly after the regular morning meeting of the entertainment committee Tuesday, Chairman Krepps was summoned to appear in the executive committee room on the steel pier. There he found assembled the members of his own committee, who presented him with a slight token of appreciation of his able leadership during the conventions. The gift consisted of a gold mounted cane and umbrella on both of which appeared the following inscription:

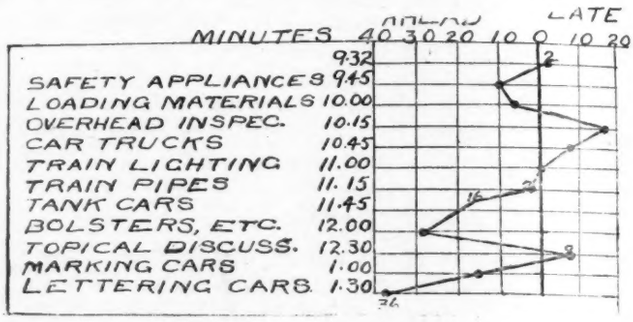
> Presented to Chairman W. K. Krepps by the members of the Enrollment Committee. M. M. and M. C. B. Conventions, Atlantic City, New Jersey, 1913.

Mr. Krepps was surprised and delighted with the beautiful remembrance.

REGISTRATION AS SHOWN BY BOOK No. 5.

Official registration book No. 5, containing all three associations up to 5.20 P. M. Monday, told an interesting story. It showed that there were registered 362 members of the M. M. Association, 325 Master car builders, a total of 687; 690 special guests, 508 railway ladies, 309 supply ladies and 1704 supply men, a total of 3,898. The totals in book No. 5, therefore, show that at the time of its going to press there were 140 more members of the railway associations and special guests present this year than in 1912, and a total increase in registration of 385.

KOWLOON-CANTON RAILWAY, CHINA.—No special development has been made on the Kowloon-Canton Railway, with the exception that Great Britain bought a tract of land comprising about 340,000 sq. ft. last June at the cost of $1,762,615 to prepare for the expansion of Kowloon station when the Canton-Hankow line is completed.



Joe Taylor's Time Study of the Performance at Yesterday's Session.
(Not an Agricultural Report!)

TRANSPORTATION COMMITTEE.

Top row, left to right—Walter Greenwood, Texas Co.; J. T. Anthony, American Arch Co.; A. W. Brown, United & Globe Rubber Mfg. Co.; H. N. Turner, Kay & Ess Co.; Wm. T. Hawley, U. S. Light & Heating Co.; M. F. Ryan, Pittsburgh Spring & Steel Co.; F. S. Hiland, Patton Paint Co.; J. F. Schurch, Railways Materials Co.; J. J. Toomey, Ball Chemical Co.

Bottom row, left to right—C. F. Elliott, Acme White Lead & Color Works; C. R. King, Pittsburgh Steel Products Co.; J. H. Kuhns (Chairman), The Republic Rubber Co.; George Hull Porter, Western Electric Co.; G. P. Berger, Gould Coupler Co.; Geo. A. Nicol, H. W. Johns-Manville Co.

MASTER CAR BUILDERS' ASSOCIATION PROCEEDINGS.

Includes Reports on Loading Materials, Overhead Inspection, Trucks, Train Lighting, Retiring 20- and 25-Ton Cars, etc.

The Tuesday morning session was called to order at 9.30 A. M., by President Fuller.

SAFETY APPLIANCES.

Owing to the magnitude of the safety appliance work and the many complications entering into it, the committee does not feel that at this time it can render any report other than a general statement of the conditions. Investigation develops that the roads are making diligent effort to equip their cars with safety appliances to meet the requirements of the law. The committee earnestly recommends that the importance of this matter be kept before the members.

In some instances it was found that the stenciling "United States Safety Appliances" on the cars was not being done in accordance with M. C. B. Sheet G, and for the benefit of all concerned the committee recommended to the arbitration committee that a note be added after Rule 52, on page 34 of the M. C. B. Code, which will indicate the location and manner of stenciling cars equipped with United States safety appliances.

The committee recommends that no further changes be made for the present in the interchange rules so far as safety appliances are concerned.

The report is signed by:—C. E. Fuller (U. P.), chairman; A. Stewart (So. Ry.); A. La Mar (Penna.); H. Bartlett (B. & M.); M. K. Barnum; W. O. Thompson (N. Y. C. & H. R.), and C. B. Young (C. B. & Q.).

DISCUSSION

F. F. Gaines, (Cent. of Ga.):—I move that the committee be continued and instructed to look into the question of whether it is going to be possible or not—in case we do not all come under the rule in time—of getting an extension. I think this committee should look into the question of getting an extension or continuation on some points—the coupler question particularly.

President Fuller:—That suggestion will be referred to the executive committee.

RULES FOR LOADING MATERIALS.

The committee recommends change in the title of the code of rules, from "Rules for Loading Materials," to "M. C. B. Loading Rules."

Rule 7.—This rule should be changed to read: "Lading will not be accepted if placed on top of box or stock cars. If lading is placed on top of wooden cars having sides not more than 30 in. high, and not less than 3 in. thick," and so on.

Rule 10.—(Second paragraph) Change the word "should" to "must," which would make this paragraph read as follows: "If the idler is a flat car of wooden construction its capacity *must* not be less than that of the carrying cars."

Rule 17.—Add "and must conform to Rule 51," to the end of the rule.

Rule 18.—In order to make this rule agree with the Safety Appliance Laws it should be made to read as follows:

"A group of cars must have at least one accessible and operative hand brake for two or three cars; or two hand brakes for more than three cars.

Rule 30.—This rule should be changed to read as follows:

"Material in open cars requiring special staking or clamping and all material carried on two or three cars, must always be examined by a competent inspector before the cars are moved from the loading point. If an inspector is not stationed at the loading point, the agent must give notice to the proper authority when the cars are loaded, so proper inspection may be arranged for. The object of such inspection is to see that these regulations have been complied with."

Rule 67.—Rule changed to read:

"Flat cars loaded with cross ties, fence posts or similar short material, will not be accepted for shipment, unless otherwise agreed."

Rules 69, 70, 71.—These rules are changed to read as follows:

"*Rule 69.*—If the load extends more than 12 in. above end or end gate at center, each pile must be tied across by at least 2 binders. Each binder is to be fastened to each tie in passing over the load (see Rules 70 and 71 for manner of securing binders)."

"*Rule 70.*—When wire is used it must not be less than good ⅛ in. diameter and but one strand may be used, the wire to be secured to the side of car at least three nails or staples, or to stake pockets, or through holes in top of flange on side of steel cars, or fastened to outside edge of first tie projecting above car side."

"*Rule 71.*—When sapling is used it must be of green timber, split, and not less than 1½ in. wide on the split or flat side. The ends of the sapling must extend at least 12 in. below car side and be securely fastened to each tie with nails in passing over the load."

Rule 74A.—The following new rule has been added:

"*Rule 74A.*—Small steel plates and similar material loaded in box, stock or gondola cars—the load should be uniformly distributed over the floor of the car. In no case should the amount of load placed between the body bolsters and either end of car exceed 15 per cent. of the capacity of cars with wood underframing, and 20 per cent. of the capacity of cars with steel underframing."

Rule 81-D.—To make this rule conform to Fig. 33-B, after the word "car" in fourth line should be inserted "On the same side of car two (2) straight-grain hardwood pieces 4 in. by 6 in. to be securely fastened to car side; the other side supported by three (3) vertical straight-grain hardwood posts 6 in. by 8 in. in section and of sufficient height that when plates are placed diagonally across the car they will extend from one side across to full width of upright posts."

Rule 82.—Add to the end of this rule the following:

"Where the weight of overhang is not excessive and material very flexible, a 6 in. by 8 in. post of sufficient length may be bolted to inside of end of car to support overhang in lieu of sliding pieces placed on adjacent car."

Rule 85.—This rule should be changed to read as follows:

"The method of loading as shown by Figs. 34, 35, and 36 may be made use of to load long lattice girders, box girders, columns, one-half roof trusses and similar material, in lengts not to exceed 65 ft., overhang not to exceed 16 ft.—height and width to conform to Rule 25, if the material would be injured if loaded on more than one car. From a point of safety in transit, it is a very undesirable method and should be used only when absolutely necessary."

Rule 91.—Change side clearances from 18 in. to 22 in. to conform to changes in Rule 51.

Rule 93.—In order to cover triple loads of long flexible material, this rule should be changed to read as follows:

"Long flexible material like plates, etc., which can not be loaded as shown in Fig. 24, must be loaded on two (2) bearing pieces and two (2) or more sliding pieces as in Figs. 41, 42, 43, 43-A and 43-B. The sliding pieces must be 4 in. lower than the bearing pieces and must have flat iron ½ in. by 6 in. secured to the upper side, either with spikes or lag screws at each end. These iron pieces which are intended to facilitate curving must extend at least 22 in. beyond each side of the lading and must be coated with grease before the lading is placed upon them. The bearing pieces must be secured to the car and the material clamped together in the same manner as described in Rules 72 and 80 to prevent it from shifting."

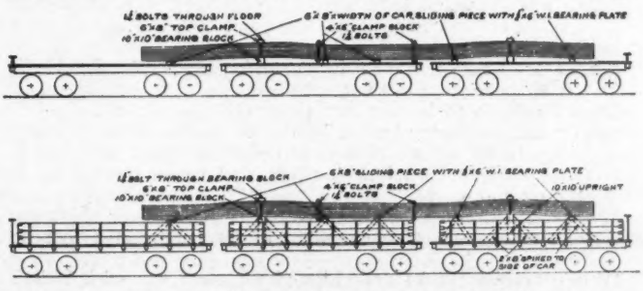


Fig. 1—Loading of Long Flexible Material on Flat Cars and Gondola Cars.

Rule 98.—The last sentence should be changed to read: "Rolling freight must be loaded longitudinally with car and must be chocked to prevent end and side motion."

Rule 103.—"All structural material and plates more than 60 ft. long, also," should be eliminated, as this class of lading is covered by Rule 93.

Rule 112.—The following should be added to this rule:

"Pipe 8 ft., or less in length, side and end protection must be provided."

Rule 112-A.—On account of the difficulty experienced handling pipe where small sizes have been placed inside of larger pipe, a rule prohibiting the practice has been sug-

gested to read as follows, and shown as second and third paragraphs of Rule 112-A:

"Wrought-iron pipe of the smaller sizes, approximately 1½ in. in diameter and less, should not be loaded inside of larger sizes of pipe, unless below the ends or end gates of cars."

"Wrought-iron pipe of the smaller sizes, approximately 1½ in. in diameter and less, should not be loaded on top of the larger sizes of pipe, unless the load is below the ends or end gates of cars, except where the smaller pipe is securely tied in bundles."

Rule 112-B and 115.—Omit the last sentence in brackets, reading: "(See Rule 112 for wiring and staking)."

Rule 115-A.—Add after the word "Pipe" the last word on page 105 the following: "Provided that blocking more than 10 in. in height will not be required."

Rule 116.—This rule has been revised to conform to the present method of loading as follows:

"Blocking of more than 10 in. in height will not be required, but on loads of pipe 3 ft., or over in diameter the blocking must be stayed by suitable chocking."

Rule 117-A.—This rule should read as follows:

"Gondola cars. Galvanized-iron culvert pipe of all sizes, for size and number of stakes to be used see Rule 12 and 112. When mixed sizes are loaded on the same car, the small size pipe when possible, should be placed inside the large size. In loading galvanized pipe Rule 9 must be complied with."

Rule 117-C.—This rule should read as follows:

"Mining cars and similar vehicles; the length of cars being equal to or greater than twice the height of car side, if loaded in gondola cars on ends, the broad side or bottom must be loaded parallel with car side and securely blocked against side of car, the other ends brought together in a cone shape. Each pair of cars or vehicles must be securely fastened together on each side with a board not less than one by 6 in. bolted to each car or vehicle with one ⅝-in. bolt, the entire load to be tied together with four strands, two wrappings of good ⅛-in. diameter wire. The blocking

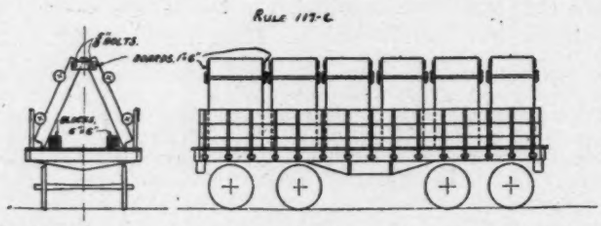


Fig. 2—Manner of Loading Mining Cars and Similar Vehicles in Gondola Cars.

must be of sound timber not less than 6 in. by 6 in. square. Fig. 61-A shows substantially how the load is to be secured."

On page 108, first line under the heading "End Protection," should be changed to read as follows:

"Cars not provided with end stake pockets the necessary, etc.," and after "or" in first line on page 109, the word "two" should be inserted.

Rule 121.—Last sentence in second paragraph should be changed to read as follows:

"End blocking to be not less than 6 in. in height, bolted to car floor and securely cleated." Fig. 64-B should be changed to conform to the above change in the rule. Four inch blocking is not sufficient to hold boilers and tanks over 8 ft. in diameter on flat cars.

Rule 121-A.—Should be added to the code to cover shipment of smoke stacks on same car with boiler. This rule to read as follows:

"When smoke stacks are shipped on same car with boiler, not less than 4 in. by 4 in. stakes should be applied to each side of car, and each pair of stakes tied together with one inch by 5 in. cross braces, nailed to each side of stakes with 3 tenpenny nails. The smoke stacks should be loaded on top of cross braces and securely wired to them with ⅛-in. diameter wire. The projection of stakes above cross brace should not be less than one-half the diameter of smoke stack."

Rule 121-B.—This rule should read as follows:

"Engines, machinery and vehicles shipped on their own wheels, should have wheels securely chocked fore and aft and longitudinal sills placed on the inside of wheels and securely fastened to floor of car. Struts should be used to prevent the heavy parts of the engine shifting endwise. One end of the strut should be placed against some strong protection on engine, machine or vehicle—the other end securely fastened to floor of car."

Rule 122.—Fig. 64 shows three horizontal tie braces, instead of one.

Rule 122-A.—The 2 in. by 4 in. diagonal braces to axel journals now shown in Fig. 66-B and 66-C, should be eliminated and angular chocks 8 in. in height against wheel tread, spiked to car floor, should be substituted.

Rules 127 and 127-A.—These rules should read as follows:

"*Rule 127.*—Hewed ties 8 ft. or more in length, or sawed ties of lengths 8 ft. to 12 ft. or similar material which does not conform to Rule 126, may be loaded longitudinally in four tiers, as per Fig. 71, in which case the ends of the tiers next to the end of car and end of ties projecting into the doorways must rest on bearing pieces not less than 6 in. thick laid crosswise on floor of car. If the length of car is such that ties can not be piled in four tiers, three tiers may be used as shown in Fig. 72, in which case the spaces between the ties must be blocked to prevent any shifting of the middle tier. When loaded in three or four tiers as indicated the door protection strips need not be applied.

"*Rule 127-A.*—Sawed ties more than 12 ft. in length (see rules for loading lumber)."

Rule 132.—A paragraph should be added as follows:

"To protect the ends of cars loaded with greased shaftings, boards 2½ in. thick, full width of car and to height of lading, should be securely nailed to end of car."

Rule 133.—This rule to read as follows:

"If box cars are used for loading heavy machinery, such as lathes, planers, boring machines, etc., each machine should be blocked by securely nailing to floor of car 2 in. by 4 in. hardwood strips fore and aft, to prevent shifting endwise."

New Rule 134.—Automobiles should have gasoline and water tanks emptied and batteries disconnected. If electric automobiles, remove batteries. Place automobile in car parallel with sides of car. See that front wheels are in line with back wheels. Set brakes. The lower third of tires should be wrapped with at least two thicknesses of good burlap to prevent chafing. Secure each wheel with bands of good strong material (canvas preferred) fastened with 2 in. by 4 in. by 12 in. sound wood blocks, placed on each side parallel with wheel, and securely nailed to car floor to prevent bands from pulling loose. Each wheel should be chocked fore and aft with angular chocking one-third the height and 2 in. wider than wheel. The chocking of each wheel should be tied together with a board on each side of wheel, securely nailed to the chocks. To preserve alignment of the front wheels small ropes tightly drawn should be fastened from the top of one wheel to the bottom of the other. Burlap should be placed around wheels under rope to protect paint. When shipped without tires, no part of the wheel except center of rim should come in contact with the chocking. In addition to chocking referred to, an iron band not less than 1¼ in. wide and not less than 18 gage in thickness should be passed over top of wheel and securely fastened to chocking.

The report is signed by:—A. Kearney, (N. & W.), chairman; R. E. Smith, (A. C. L.); L. H. Turner, (P. & L. E.); W. F. Kiesel, (Penna.); C. N. Swanson, (A. T. & S. F.); G. H. Gilman, (No. Pac.), and J. M. Barrowdale, (Ill. Cent.).

In presenting the report, Mr. Kearny said: "Rule No. 93 is to be modified to the extent that we will allow a uniform plate of 1¼ in. Under Rule No. 117-A, there should be added to the code to cover shipment of galvanized "corrugated sheet" iron culvert pipe."

The committee had a meeting yesterday, and received some other suggestions relating to changes in the M. C. B. Loading Rules. The committee would like to embody the following changes in its report:

Rule 12.—Add to first sentence fourth line, "or rolled or built up steel sections of equal strength."

Rules 15-A, B and C.—Make reference to the use of "sliding pieces" as well as "bearing pieces."

Rule 15-E.—Make reference to 15-C.

Rule 15-E.—In order to make the rule correspond to the figures, it should be changed as follows:

"For twin or triple loads of long flexible material, such as plates or similar lading, requiring two or more sliding pieces in addition to the bearing pieces, the weight of lading must not exceed one-half the capacity of car, and must conform to Figs. 41, 42, 43, 43-*A* and 43-*B*.

"For material of less flexibility such as heavy channels and I-beams, see rules 15-*A*, *B* and *C*, and Figs. 39 and 40.

"For Tee and girder rails 60 to 65 ft. long, loaded on flat cars, having four or more stress rods or on gondolas with deep ends, the lading may equal the marked capacity of car."

Rule 22.—add to end of second section: "Or rolled or built up steel construction."

Rule 24.—change to read: "The preferable distance between bearing pieces under lading on two or more cars is 7-10 the total length of lading, with allowable variation from 6-10 to 8-10."

Fig. 12.—Add to the heading, "Rule 91."
Fig. 29.—Omit the words "in bundles" in notes.
Add Fig. 33-A to second line of heading to table covering maximum weight of load.
Fig. 43—Add the word "flexible" to heading, after the word "material."
Rule 74.—Reference to Fig. 29 should be omitted.
Rule 76.—Reading should refer to Fig. 33-*A* as well as Fig. 24.
Rule 78.—Change the words "bearing pieces" in the second line to "clamping pieces."
Rule 93.—Page 83 first line, change to ¼ in. x 6 in.
Rule 94.—Change words "bearing piece" in sixth line to "clamping piece."
Rule 100.—Add "See rule 93 for sliding pieces and sliding irons."
Rule 101.—Omit.
Fig. 59—Change cut to show 3 instead of 4 pairs of stakes to illustrate the rule rather than the exception.
Rule 81-B.—Add words "structural bars and shapes," after "plates" in first line.
Fig. 46—Change heading to read: "Structural material loaded on flat cars or top of sides of gondola cars."

DISCUSSION

I. S. Downing, (L. S. & M. S.): Under Rule 121-B it says: "Engines, machinery and vehicles shipped on their own wheels should have wheels securely chocked fore and aft, and longitudinal sills placed on the inside of wheels and securely fastened to floor of car." A little further down, it says "securely fastened to floor of car." Inspectors generally understand when you say "shipped on their own wheels," that the thing will run on the way like a crane. We had a serious accident on account of a crane loaded on a flat car, the wheels of which were securely locked, but the machinery of the crane was not locked. It was only covered by canvas, and in going around the curve, the machinery of the crane became free, and a serious accident was caused, and I think we should specify that the gearing of these cranes should be blocked.

A. Kearney: It is the intention to cover that point by an illustration which will show how that class of shipment is to be handled.

M. K. Barnum: I suggest that in Rule 121-B the word "shipped" be changed to "loaded";—"Engines, machinery and vehicles loaded on their own wheels."

A. Kearney: That is acceptable to the committee. (The report was referred to Letter Ballot).

OVERHEAD INSPECTION OF BOX CARS.

The committee on Rules for Loading Materials, to whom was last year assigned the formulation of rules for the overhead inspection of box cars for loading, was forced to present a report of progress at the last convention on account of its inability to satisfactorily cover the field a subject of so much importance seemed to warrant. With the assistance of the American Railway Association, the General Managers' Association of the Southeast, and others, a great deal of data showing in a general way what was taking place, and what claims were resulting from damaged and defective equipment, were secured; however, the statistics submitted at that time and those subsequently obtained seem to be much the same, except perhaps in quantity, rate of increase and losses sustained.

On account of the many damage claims presented, with the attendant difficulties in adjustment, often by reason of uncertainty in some instances as to the proportion of the claim that might belong to the condition of the car at the initial point of loading, and how much originated on the line of the road, its treatment, etc., it seemed proper to mention at the outset that the solution of the problem evidently narrows itself down to the important factor of inspection, selection and proper preparation of the car at the loading station. The committee found itself confronted with innumerable difficulties and objections offered by railroads explaining that latitude must be allowed on account of possible unwarranted interference to movement where unnecessary time might be consumed selecting and preparing equipment, especially where the supply and opportunity to obtain equipment is of considerable moment. It is still further argued that such a procedure might result in embarrassment if any specific and more stringent rules are established for the crating and inspection of equipment, even though the work be confined to cars for shipment of only certain commodities readily damaged by water, or leakage losses. At all events, it seems to be the general opinion, at least in certain localities, that steps might be profitably taken working to the standardization of rules and requirements for the selection and inspection of equipment required for certain shipments, and it is the opinion of the committee that if it is going to be possible to secure improved conditions along this line, they are most likely to be obtained by confining attention to shipments readily damaged by moisture, eliminating for the present the consideration of other commodities, at least until some systematic rule can be established and gotten under way.

It has been the idea of the committee that a composite card acceptable to the roads now following the practice of securing certificate of inspection cards will be the first solid ground reached in working to a uniform practice and if the interest of such roads can be secured in this direction, the proposition will be readily given the necessary impetus to carry it as far as it can be employed with profit and without danger of being used beyond the point of economy. Working to this end the committee has secured what is supposed to be a complete list of roads using certificates of inspection cards. They are as follows: Great Northern; Chicago, Burlington & Quincy; Chicago Great Western; Chicago, Milwaukee & St. Paul; Minneapolis, St. Paul and Sault Ste. Marie; Illinois Central; Atchison, Topeka & Santa Fe and St. Louis & San Francisco.

The Great Northern, Chicago Great Western, and Chicago, Milwaukee & St. Paul use only one form of card and the card used by each road is practically the same, and is given below:

C. M. & St. P. Ry.
This car
No..... Initial.....
FOR FLOUR.
Inspected by.....
Date....., 191.....

There have been no special instructions issued by these roads as to the inspection to be made, a specially trained man being selected for the work.

The C. B. & Q. are using four different forms of inspection cards, one being for flour, cement, grain, rough freight; one for flour, one for cars fit for grain and one for cars not fit for grain. There are no specific instructions for inspection issued. The master mechanics are instructed to have the empty cars inspected and carded according to their condition and the requirements of traffic.

The M. St. P. & S. S. M. is using two inspection cards, one for cars suitable for flour loading, and one for cars not suitable for flour, grain or merchandise. The instructions relative to the use of these cards are that the cars are to be given a special interior and exterior inspection to see that sheathing, lining, flooring, roofing, doors and fastenings are in good condition; any small holes found in the floor are to be cleated over, care being taken to bevel the edges of the cleats to prevent damage to flour sacks. Cars with a bad odor, due to carrying hides, oil, etc., are not to be used for flour. Cars otherwise O. K.'d with the exception of having small oil spots on the floor are to be painted over with quick-drying paint. All projecting nails, spikes or bolts to be removed or driven in to prevent damage to flour sacks, and all cars are to be swept out thoroughly clean. Cars fit for flour loading are to be carded O K., and the numbers and initial of such cars are to be turned in to the agent.

The Santa Fe is using two inspection cards, one for flour and one for grain loading. There is no difference in the make-up of the cards, except that one is printed in red and the other in green. The Santa Fe instructions relative to the use of the inspection cards are as follows:

Where car inspectors are located, cards will be furnished the inspectors, and at the stations where there are no car inspectors, the local agents, or their representatives, will inspect all cars for grain and flour loading. If after proper inspection cars are found to be in suitable condition for grain and flour loading, a card is to be attached to the car door, three feet from the bottom of the door. Switchmen or local crews should be prohibited from placing at loading docks, platforms, or elevators, an empty car which does not have one of these cards attached. When a car has been inspected and card placed thereon and placed at loading dock, and when shipper or his representative has inspected the car and accepted same for loading, the card will be detached and returned to the representative of the company, and shall be attached to and filed by the agent with duplicate bill of lading or shipping instructions. Shippers must be notified when a car is made empty at their plant that the car must not be loaded until it has been inspected and necessary card attached. The Santa Fe is now contemplating the use of another form of inspection card, which is made up in manifest form so that shippers can have a copy for their use.

The Frisco Lines are using three forms of inspection cards, and an abstract of the instructions follows: The roofs must be carefully inspected to ascertain if waterproof, the doors to see that they fit tight, and are in good condition. The doors should be pulled shut and inspected for leakage. The doors of all cars loaded on Frisco rails and on foreign line rails for movement via Frisco, must be wedged, papered and striped in the following manner: Drive one wedge

between each door shoe and the door, which will force the door up against side of car. After the wedges have been applied, a strip of odorless asphalt paper, 11 in. wide, must be applied over the openings of the car door, that is, one strip on each side of the door and one on the top of the door, the paper to be held in place with narrow wooden strips. A standard grain door section is seven ft. long and 20 in. wide. Usually three or more sections are used for each door. They should be placed in position and nailed to the door posts with 8-penny nails. Large nails or spikes must not be used. Care should be exercised to see that the doors fit closely, and that there are no holes in them. Nails protruding from door posts must be pulled out so that the grain doors will fit closely. Grain doors made of light material must not be used for the bottom or middle section, account pressure being greater on these sections. Doors made of good strong lumber should be used. Burlap will be furnished by the store department upon receipt of proper requisition, cut in strips eight ft. long and 40 in. wide for the doors, and 3 ft. long and 40 in. wide to cover the draft bolts. Two strips 8 ft. long should be used to cover the grain doors. This leaves 6 in. over each end of the grain door for tacking to the side of the car. The lower strip should be allowed to lap on the car floor 8 to 10 in. in order to make a leak-proof joint. It must not be tacked to the car floor. The top strip should lap over the lower strip from 4 to 6 in., and should not be tacked to the grain door. Wooden strips will be furnished with the burlap to tack the ends to the side of the car. The short pieces of burlap are to be tacked over the draft bolts and held in place by short strips of wood tacked around the edges. Burlap should be applied loosely and not stretched tight across the boards, so that it can give and not tear from the bulging of the doors.

While the general practice seems to be to use cards bearing printing in large letters showing a specific commodity, or in some cases one or two products, the committee did not seem to be able to readily get away from a card on which provisions are made for the designation of the shipment for which the car is inspected and made suitable without introducing more than one card, which is not wanted unless it cannot be avoided. A sample of such a card, representing the result of a combination of all the cards, with their instructions, is as follows:

A. B. & C. Ry.
This car
No..... Initial.....
O. K. FOR SHIPMENT OF COMMODITIES.
Under.....Classification.
Inspected by.....
Date.....191.... Station.....
(Size of card, 6 by 8 inches.)

The committee points out the three apparent classifications of lading for which the box car is on some roads and in some localities receiving special attention before loading. The three following classifications were given as covering the situation at least until improvement can be suggested and worked out.

CLASSIFICATION *A*.—Flour and sugar.

CLASSIFICATION B.—Bulk grain.

CLASSIFICATION C.—Lime, cement, plaster; boxed, sacked and crated packages of seeds, coffee and merchandise; hay, dry goods and notions; high grades of finished lumber; tobacco, furniture, household goods and certain grades of tin and galvanized iron.

In the arrangement of the above classification, the items shown under *A* have been grouped together in order to secure cars which might be necessary for such shipments, i. e., those free from soiled floors and interiors carrying odors liable to damage the goods; whereas cars selected for classification *B*, intended for bulk grain, clearly indicate by their character what might be suitable for their safe transportation; likewise classification *C*, covering the commodities mentioned, could be safely transported in a car which, while it should be tight, need not necessarily be as carefully selected as to other conditions as a car for classification *A*.

On the back of the cards, inspection instructions should be printed as follows:

INSPECT FOR

Classification *A*.	Classification *B*.	Classification *C*.
Leaky roof.	Leaky roofs.	Leaky roof.
Loose siding.	Loose siding.	Loose siding.
Loose roof boards.	Loose roof boards.	Loose roof boards.
Shifted roof sheets.	Shifted roof sheets.	Shifted roof sheets.
Broken door stops.	Broken door stops.	Broken door stops.
Leaky doors, tops and sides.	Leaky doors, tops and sides.	Leaky doors, tops and sides.
Broken end posts.	Broken end posts.	Broken end posts.
Broken or loose door posts..	Broken or loose door posts.	Broken or loose door posts.
Protruding nails in floor and lining.	Holes in floor and around center plates and draft	Protruding nails in floor and lining.
Floors soiled by oil, grease or any material carrying odors likely to damage lading.	bolts.	

METHOD OF INSPECTION BEFORE LOADING.

(A) Inspection to be made at point of loading whenever practicable.

(B) At point of distribution from which car is forwarded to loading station, and again by Agent.

(C) Cars received and unloaded at station where no inspectors are located, should be inspected by the Agent.

Aside from the Master Car Builders' inspection of car, including roof, running boards, air brakes, safety appliances, and running gear, as well as the external inspection of sides, ends, doors, ventilators and windows an internal inspection must be made of the roof and siding, with doors, ventilators and windows in closed position.

1. Search for light indicating openings and cracks which might produce leaks.
2. For loose, damaged and broken boards, loose knots, knot holes, bad joints, etc.
3. For all nails and bolts extending above surface of floor and lining and nails protruding through roofing.
4. Search for water stains indicating cracks and air spaces.
5. Search for cracks sufficient to admit storm water beating through opening, also for openings and bad joints around window and doors.
6. Examine for metal sheets out of position along edge of subcarlins or down from edge of ridge pole.
7. Search for small holes in metal roofs due to rust or small openings in roof from other causes.
8. Doors must open and close properly.

The floors should be clean, dry and free from defects sufficient to admit moisture, and any fouling by previous shipments, such as fertilizer, oils, and other freight which would damage more perishable commodities. If the centerpin is uncovered, it might be necessary to cover it with a piece of board, depending entirely upon the character of freight to be loaded. Inspect closely for defects in framing which might, by reason of their weakness, allow the sheathing to be readily broken or damaged.

After a car is thoroughly inspected and known to be in good condition and suitable for the transportation of the commodities in the classifications, the inspector or agent, as provided for, making such inspection or able to certify to the condition of the car, must make out the prescribed certificate of inspection card and tack it to the car just under the car number. After the car is placed and accepted for loading, the certificate of inspection card must be detached from the car and delivered to the Agent before bill of lading is issued. The card must finally be attached to the agent's office copy of bill of lading or shipping ticket, for future reference in case of question arising as to the condition of car before loading.

Inspection of car bodies, doors, and the placarding of bad roofs, etc., as well as making notation of the extent of damage, is at present given attention; but it is also true that the general results seem to indicate that improvements can be made and higher efficiency obtained, since it seems to be generally accepted that any observation, inspection, and amount of prevention can be more economically directed at the time of selection and preparation of the car than through repeated repairs and attention to cars en route, only to find the car arriving at its destination offering opportunities for criticism and possibly heavy damage claims. Hence the fact remains that the successful launching of any systematic and uniform practice hinges upon a closer inspection of equipment as to the physical condition of the superstructure for the loading of certain commodities, and such inspection should be made in the best possible manner, to meet local conditions.

SUPPLEMENTARY REPORT.

The foregoing report was forwarded to the eight railroads now using a certificate of inspection card, inviting from them criticism and suggestions as to what might be further offered in the committee's report. The real object, as explained to them, was to obtain their views upon the conclusions reached by the committee, and to further ascertain if in their judgment a uniform plan and the uniform card, as suggested by the committee, will meet the requirements; furthermore, if they would be willing in the interest of uniformity to use it in lieu of what might now be their practice.

The committee failed to secure unanimous approval of the inspection card recommended. While the majority of the roads agree to the arrangement of the card, and the plan covering its use as suggested, others think that better results can be obtained by using separate cards for each classification, either printing on the card the commodity to be handled, or by using cards of different colors. The main objection raised against a single card for the three classifications is on account of requiring the inspector to write the letter *A*, *B*, or *C*, indicating the classification; and there is still another objection raised, as it contemplates requiring the switchmen or trainmen to read the card and ascertain from the information written thereon the class of commodity the car is suitable for handling.

The committee found that a schedule for such an inspection was feasible, as has been shown in the report, and that the requirements can be made to very readily fit in with whatever final form and plan of handling the card is adopted; but has not been so successful in working out a card satisfactory to all railroads. The use of colored cards would seem to be perfectly practicable, and would not necessarily disturb the fundamental inspection plan proposed, provided it would be considered better to relieve the inspection force from writing the classification *A*, *B*, and *C* on the card (which as a matter of fact is practically nothing); and requiring as a substitute the carrying of a larger number of cards so as to designate the classification by color. It would seem that even such an arrangement could be worked out and still obtain a uniform practice; but it is the opinion of the committee that since it has gone about as far as it can in the consideration of this subject from a mechanical point of view, that the subject should be referred to the American Railway Association, or that a committee be instructed to handle it in conjunction with that Association. The report is signed by:—A. Kearney (N. & W.), Chairman; R. E. Smith (A. C. L.); L. H. Turner (P. & L. E.); W. F. Kiesel, Jr. (Penna.); J. M. Borrowdale (Ill. Cent.); C. N. Swanson, (A. T. & S. F.); G. H. Gilman (N. P.).

DISCUSSION

C. N. Swanson, (A. T. & S. F.): As a member of this commitee, I would say that we have received communications from our operators and transportation officials. I will read one of them:

"Your letter of May 12, addressed to Mr. Raymond as chairman of the cooperage committee, enclosing a copy of your letter of April 21, to Messrs. Lehman and Purcell regarding overhead inspection, and the adoption of a uniform inspection card."

Uniformity of action, if well directed on the part of all railroads in the matter concerning car maintenance, is commendatory because:

First: It serves to develop a more general understanding of car defects, their nature, and what to the ordinary inspector to-day may seem trivial is indeed responsible for the payment of thousands of dollars in claims for damage done when loaded with certain commodities under certain conditions. A Santa Fe car inspector today may be the inspector of another railroad tomorrow. If he learns to do his work right on the Santa Fe, he will be more valuable to the other railroad he is employed by, if they work along the same line as we, and to the same end.

Second.—It is one more step in the ultimate direction of co-operative endeavor along which road railroads must travel if they are to attain maximum results in the operation of their properties. There is no more reason why the railroads whose interests otherwise are foreign, should not work together for the common good of all, when the upholding of a common economic principle rests in the balance, than there is of two divisions of the same railroad.

Third.—Aside from this, I am in favor of the uniform card, because it is designed to meet all conditions and will do so far better than our present individual grain and flour inspection card. The use of such a card by all railroads would develop into a great good, and in the event it is adopted by the M. C. B. Association, I trust its adoption by the various railroads who are members of that Association may be forthcoming at an early date.

F. F. Gaines: I move that the committee be continued, and the matter referred to the American Railway Association, with the understanding that this committee stands ready to co-operate with them in everything they can. (Motion seconded).

T. H. Goodnow, (C. & N. W.): Is the proposed card supposed to carry any empties in the way of exchange; that is, by delivering cars to other roads on orders. If this card is intended to protect the line receiving those empties in moving the cars into the train-loading territories to ensure good cars? Or is it simply intended to be used by the road in selecting their individual cars and forwarding them to train-loading points? If it is the latter, it will not accomplish much more than their present arrangement for such selections.

C. N. Swanson.—We believe in a card of the character; that when Road *A* asks for a number of cars from Road *B*, the cars will be so thoroughly inspected that they will be delivered to Road *A* fit for the commodity for which they were sent over, whether it is wheat, flour, cement, or whatever it may be. When an agent calls for cars, there is a thorough inspection made for grain or flour loading, and that is the intent of this uniform inspection card.

T. H. Goodnow: If the committee has not considered that, I suggest that they do so for the reason that it is becoming more and more the practice to deliver cars on orders, already coopered with the train doors boarded up, and it is difficult for the receiving roads to make an interior inspection of the cars without providing their inspectors with ladders; and if it could be carried out and accomplish that particular effect, it would serve a good purpose.

C. N. Swanson: It should not be necessary for the receiving road to make such an inspection if the car has been thoroughly inspected and coopered, and the card placed on the car. The card on the car would indicate that the car was fit for the commodity intended.

A. Kearney: Mr. Hale of the American Railway Association suggested that it might be well to have this item returned to that Association with a definite recommendation.

D. F. Crawford (Penna.): There are only a total of 8 roads, out of all those in the United States, apparently, that are using this card, and I do not feel that the association itself is prepared to send this to the American Railway Association with its endorsement.

F. F. Gaines: I would not favor the proposition that the association is to go on record as favoring this as standard practice, by any means whatever, at this time, but we have got to the point, if you want to go any further with it, and it does seem desirable that we should go further with it, that it be recommended only as Recommended Practice. The operating end wants it, it is purely an operating proposition.

President Fuller: Mr. Crawford is correct in his position. There are very few of the members present who know very much about the subject, and they have not had much time to consider it. It seems to me that the Committee's recommendation in the last part of the report is about as far as you can consistently go, or about as far as this Convention can consistently go.

I. S. Downing: I do not think that these different classes of lading should be put up to the car inspector, for the reason that they do not know how many cars are wanted for grain, etc., except on special order, and if this rule is adopted in big yards, it will compel the inspecting forces to inspect 5,000 or 6,000 cars and card them and classify them, and maybe they only want 50. I think the agents' men know as much about grease-spots on the floor of the cars, and such things, as our inspectors do. We have to put on special men to do this work on our road. I think as Mr. Goodnow says, this is to be an individual lading proposition, each road handling their cars and inspecting their cars. I do not think we should try to inspect cars three or four hundred miles away from the point where they are to be used, for another road.

W. E. Dunham, (C. & N. W.): I have had considerable experience in the past few years in inspecting cars for grain lading, and we do not depend even upon the neighboring divisions of our own road for inspection. We inspect the cars again, and inspect them where they are loaded, and that is the only way in which we can absolutely cut out the use of improper cars.

A. Kearney: I simply wish to say a few words in the way of explanation. This report was handed to us by the American Railway Association. A committee of that association presented a report to the executive committee of the M. C. B. Association, showing them what had been lost, or what was being lost, by reason of the poor inspection of cars, and asking the executive committee of the M. C. B. Association if they thought they could work out a code of inspection rules for such equipment. That has been the work of this committee, and now I should say we are ready to report back to the American Railway Association and hand them this recommendation for the inspection of such equipment.

T. H. Goodnow: I believe that if the report is confined to the question of inspection, a system of inspection of the cars, that will be all right, but the introduction of these cards is another matter. If, as Mr. Kearney stated, that will be left solely to the loading road, to use the cards for their own protection, they carry no significance with them, and I do not see why it is not as well for the road to handle the inspection under the system of chalking the cars or whatever other means the roads prefer to use. The big grain-loading roads in the West have to haul cars empty hundreds of miles, and you cannot depend on the inspection in big cities where the cars accumulate, to have the cars O. K. when they arrive out in Dakota, for example.

F. F. Gaines: I believe our managements, as a whole, are looking to us to do something, not so much as an interchange proposition, but in the way of a more thorough inspection of box cars to prevent damage to lading. It is not my idea that this thing is being presented for adoption

as standard to concur with the recommendations started by the American Railway Association. We have done all we can, and now it is our province, I believe, to turn it back and see how far they want to go with it.

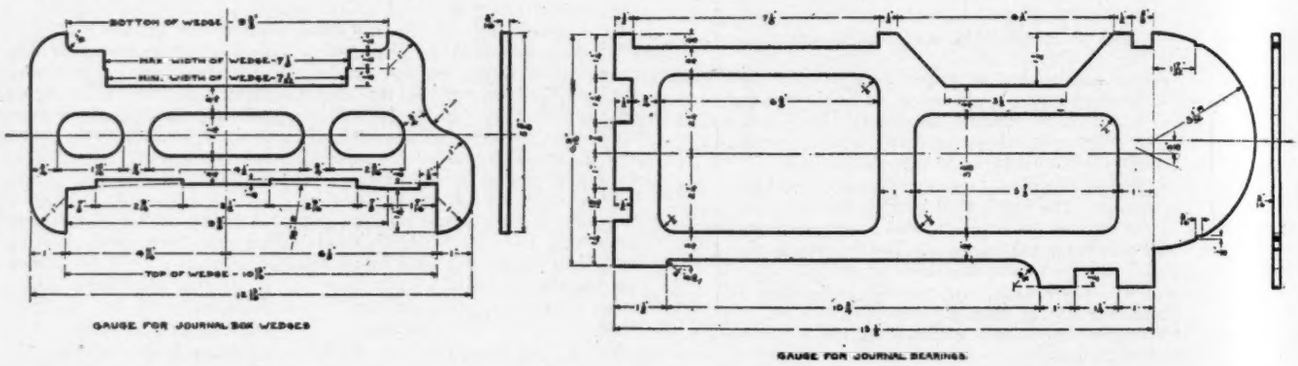
I. S. Downing: I do not feel like some car men, that we are entirely responsible for this equipment. Our assistant superintendent of motive power and myself made an inspection of 27 cars last week, and out of the 27 cars, we found 7 brand new cars unfit for grain loading, due to the fact that the cars had been loaded with hides and oil. The transportation department will not switch out good box cars, and take them for grain, if they need them at the nearby freight house. The American Railway Association can help the mechanical department by getting at these fellows a little and stopping that sort of thing. It costs the freight department a considerable amount of money to switch cars not fit for grain, to the rough loading station and hold the good cars for grain and a good load.

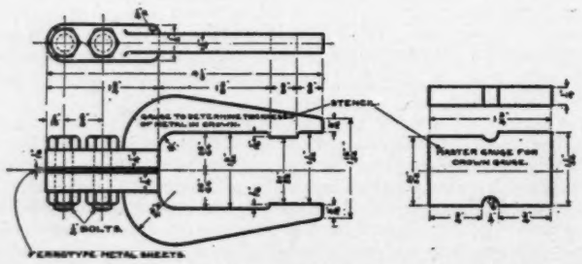
C. E. Chambers, (C. of N. J.): Mr. Downing struck the nail on the head. How many of the roads here have absolute control over the conditions at the points to which their cars go? Many times the cars are put in as fit for a certain class of freight, and the roads do not have an opportunity to inspect for that class of freight. The transportation department orders the cars where they want them, and uses them as they want them.

J. J. Tatum, (B. & O.): I believe there should be some standard method of inspecting cars for special lading. The necessity for such a method is brought about by the car supply. If you have not a sufficient number of cars of a certain class to supply for a certain shipment, you have to resort to means to supply the cars from what equipment you have then to select from. You may start your car after an inspection by an ordinary inspector at your own yard, and at an interchange point the inspector may hold out the car, and he may decide the car to be unfit for grain and flour. He may possibly lay out for rough freight a greater number of cars than the equipment in hand would justify him in doing.

A short time ago, a large number of cars were selected in Chicago for the transportation of grain. In the train which was dispatched, there were so many for grain and so many for flour and so many for rough freight. When they were delivered to the loading road, the cars which were chosen by our inspector as being fit for grain, were considered by the inspector of the loading road to be fit only for merchandise freight, and it resulted in many of these cars being cut out for the lading they were intended for. So it seems to me almost impracticable to think that one road can inspect for another road, because they are along different lines as regards the class of cars they will use for different lading.

(Mr. Gaines' motion was then put and carried.)





Journal Bearing and Wedge Gages for 6 in. x 11 in. Journal.

CAR TRUCKS.

The following subjects were assigned by the executive committee to the committee on car trucks and the committee reports as follows:

DESIGN OF CAST-STEEL TRUCK SIDES AND BOLSTERS FOR FREIGHT CARS.

Cast-steel Truck Sides.—The various designs of cast-steel truck sides were considered, but as a number of them are covered by letters patent it was decided to prepare diagrams showing the limiting dimensions for truck sides for 80,000, 100,000 and 140,000 lbs. capacity cars, so as to provide for interchangeability of truck sides of the same capacities but different design, instead of proposing any definite design. The truck sides which come within these proposed limiting dimensions are to be subject to the specifications and tests contained in M. C. B. Recommended Practice adopted last year, which are being revised, and will include a proof load test for deflection without permanent set as well as limiting weights. This will provide truck sides which will be safe and interchangeable for the given capacities of cars for which they are intended and eliminates those of weaker designs.

The manufacturers have submitted drawings of the different truck sides manufactured by them, which are being tabulated with a view of arriving at the limiting dimensions. Results of tests of various truck sides made by individual railroads as well as manufacturers have been considered and tests are now being conducted by the committee, but the latter are not completed, which prevents submitting definite recommendations to the Association this year.

Cast-steel Truck Bolsters.—Tests of various types of cast-steel bolsters have been made and it is confidently expected that the committee will be able to recommend a standard design for Recommended Practice next year which will be applicable to truck sides represented by the contemplated limiting dimensions. It is intended to make provision for adjustable side bearings; and the question of center plates, whether they should be cast integral or be of the removable type, is receiving consideration.

The bolsters conforming to the design which will be proposed are to be subject to the specifications and tests contained in M. C. B. recommended practice adopted last year, which will be revised and also include a proof load test for deflection without permanent set, as well as limiting weights.

LIMITING STRAINS PER SQUARE INCH FOR ARCH BAR TRUCKS.

It is the opinion of the committee that little would be accomplished in endeavoring to harmonize the different formulæ used for figuring the limiting strains for arch bar trucks, with a view of establishing a standard along these lines. The association has adopted standard arch bars, column and journal box bolts for 80,000 and 100,000 lbs. capacity cars. These standards are not being adhered to generally by the different railroads, changes being made in the truss dimensions to accommodate car construction and for design reasons. Different sections of arch bars are also used by some railroads on account of the standard section failing to meet the service conditions imposed. The committee is making a series of tests of the M. C. B. arch bar side frames, as well as of a number of individual designs, to determine their relative strength, and this data will be available for comparison with the tests of the cast-steel side frames when completed.

AXLE FAILURES UNDER TENDERS AND TENDENCY OF THE JOURNALS TO ROLL OUT OF THE BEARING.

George R. Henderson, Consulting Engineer of the Baldwin Locomotive Works, raises two questions concerning the standard *C* and *D* axles, with 5 in. by 9 in. and 5½ in. by 10

in. journals, respectively, when used under tenders in connection with the operation of the quick-action E. T. brake under emergency application as follows: Axle failures. Tendency of the journal of the axle to roll out of the bearing or under the edge of the bearing.

In reply to the first question, the committee would refer to the report of the Committee on Axles to the 1896 convention. The committee has not heard of any failures on these axles purchased according to specifications under the conditions mentioned by Mr. Henderson.

Referring to the tendency of the journal to roll out of the bearing, the committee would state that while it has no knowledge of this condition existing on tenders or freight cars, it was found on passenger cars equipped with standard M. C. B. bearings and high-hung single brake. Lowering the position of the brake shoe prevented the journal from rolling out from under the bearing. This tendency to roll out does not exist with clasp brakes. This subject was considered by the committee which conducted the Lake Shore Emergency Brake Tests, and their recommendations are recorded on page 89 of the 1910 M. C. B. Proceedings.

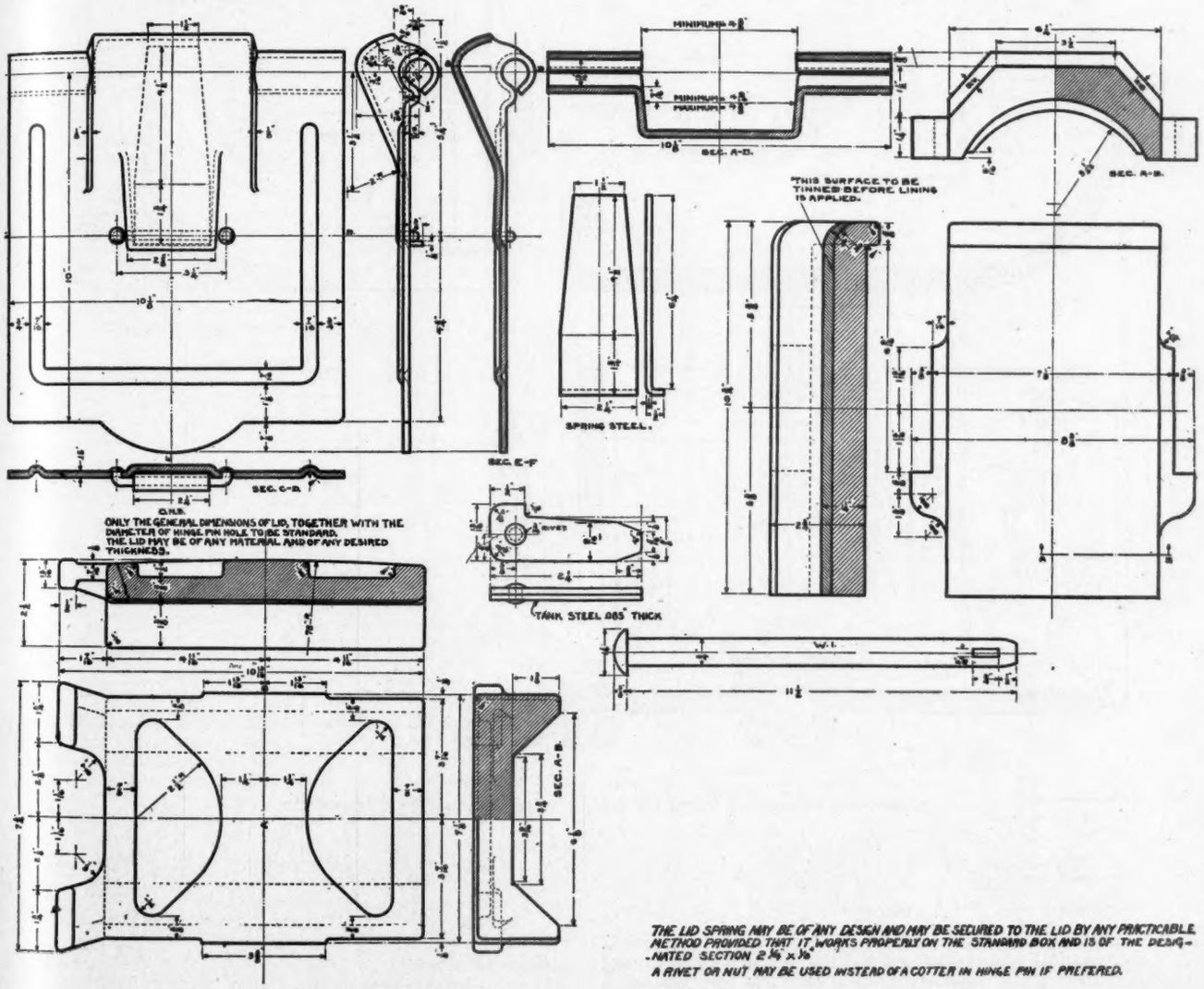
SPRINGS.

The committee on springs for freight car trucks at the last convention submitted a tentative design of spring for 140,000 lbs. capacity cars with arch bar trucks, recommending that the various railroad companies furnish dimensions of available space, or preferably prints of springs which have been designed or used for trucks with 6 in. by 11 in. axles. As far as has been ascertained, the Baltimore & Ohio and the Pennsylvania Railroad are the only roads who have placed such trucks in service.

The line of investigation thus far made covers the use of alloy steel springs. If alloy steel springs, which will stand about 35 per cent. more stress when solid, can be furnished, it will be possible to adopt springs with sufficient flexibility for trucks having 5½ in. by 10 in. journals without any change whatever in the space now allotted for springs. For trucks having 6 in. by 11 in. journals it would then be advisable to use five springs, of exactly the same details as the four springs used for the 5½ in. by 10 in. journals, which will require the same height and about 40 per cent. more width for spring space. It would then be advisable to make the bolster for the 140,000 lbs. capacity truck somewhat wider, in order to avoid, to some extent, increasing the depth.

CONSTRUCTION OF CENTER PLATES FOR STANDARD FREIGHT CARS.

This subject originated in a communication from W. J. Tollerton, General Mechanical Superintendent of the Rock Island Lines, in which he suggests for investigation "The construction of center plates, for standard freight cars, bringing present practice as shown in the M. C. B. Proceedings up to date. Center plate shown is some ten years old and not suitable for steel-constructed cars."


SEC. A-B.
SEC. C-D.
SEC. E-F
SPRING STEEL.
"THIS SURFACE TO BE TINNED BEFORE LINING IS APPLIED.
TANK STEEL .065" THICK
O.H.B.
ONLY THE GENERAL DIMENSIONS OF LID, TOGETHER WITH THE DIAMETER OF HINGE PIN HOLE TO BE STANDARD. THE LID MAY BE OF ANY MATERIAL AND OF ANY DESIRED THICKNESS.
THE LID SPRING MAY BE OF ANY DESIGN AND MAY BE SECURED TO THE LID BY ANY PRACTICABLE METHOD PROVIDED THAT IT WORKS PROPERLY ON THE STANDARD BOX AND IS OF THE DESIGNATED SECTION 2 ¼ x ⅜
A RIVET OR NUT MAY BE USED INSTEAD OF A COTTER IN HINGE PIN IF PREFERED.

Journal Bearing, Wedge and Lid for 6 in. x 11 in. Journal.

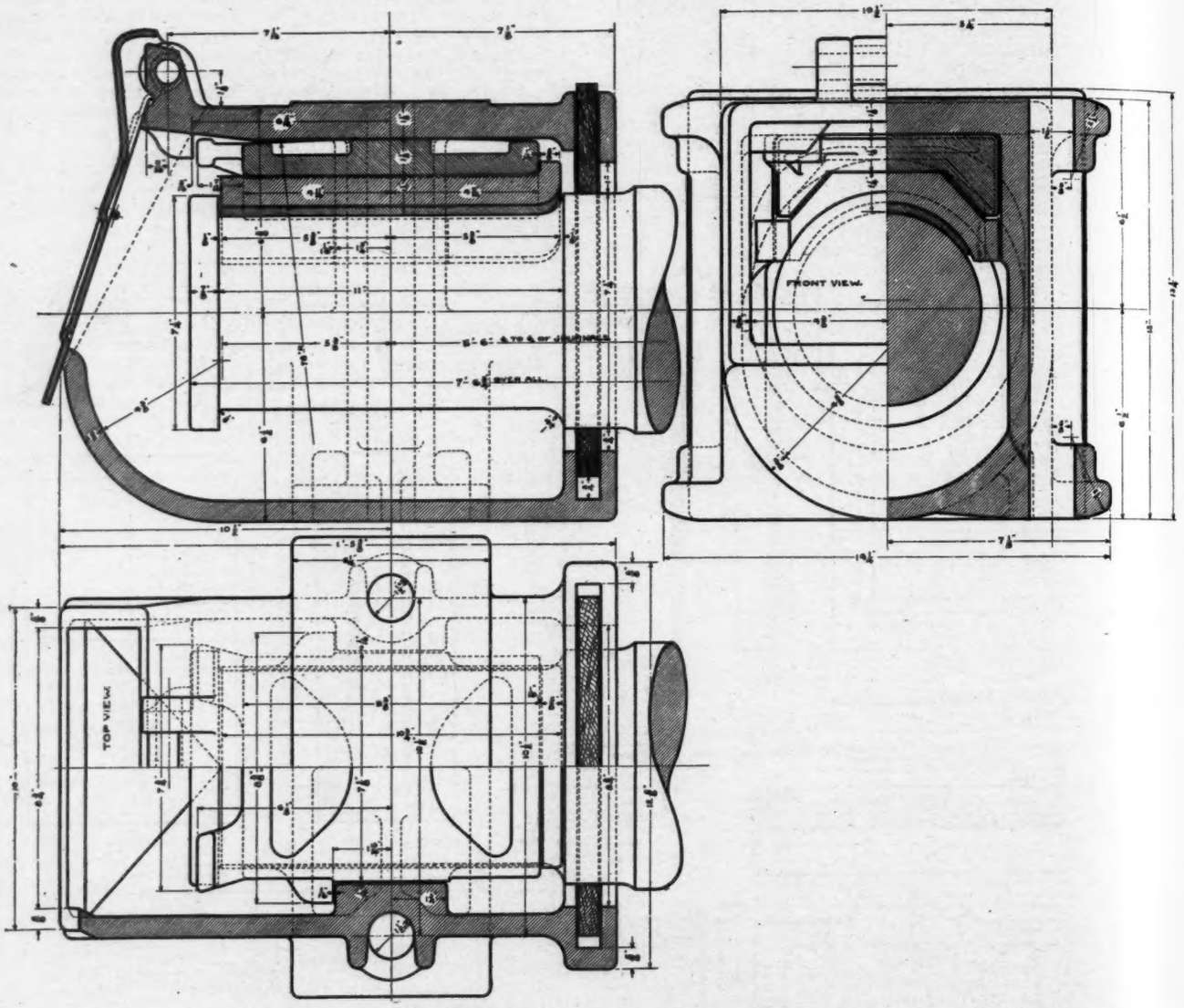
This center plate has been generally adopted on 100,000 lbs. capacity cars, and we have not heard of any serious objections to them. This subject will be given further consideration by the committee in connection with the design of the standard truck details.

JOURNAL BOX, BEARING AND WEDGE FOR 6 IN. BY 11 IN. AXLE USED IN FREIGHT SERVICE.

D. F. Crawford, general superintendent motive power, Penna. Lines West of Pittsburgh, recommends that standards be adopted for journal box, wedge and bearings for

standard axle with 6 in. by 11 in. journal. The committee presented designs and recommended that they be submitted to letter ballot for adoption as Recommended Practice.

The report is signed by:—J. T. Wallis (Penna.), chairman; J. R. Gould (C. & O.); J. J. Tatum (B. & O.); E. W. Pratt (C. & N. W.); R. W. Burnett (C. P.); James Coleman (G. T.), and G. A. Hancock (St. L. & S. F.).



Box and Contained Parts for 6 in. x 11 in. Journal for Freight Cars.

DISCUSSION.

W. E. Dunham, (C. & N. W.): I note the exhibits A and C, that the detail of the wedge indicated is not according to the latest practice of the Association. The face has been increased, and I think this should be changed in the same way before it is submitted to letter ballot.

C. A. Schroyer (C. & N. W.): I do not entirely agree with Mr. Henderson's second question included in the report insofar as the experience of our line is concerned. We have had much trouble caused by shocks in the yard while switching. This was brought very forcibly and costly to our attention, from the fact that we used cast-iron oil boxes at one time, and under the larger carrying-capacity cars, were having the sides of the boxes knocked out constantly. I have seen the sides of five oil boxes broken out of one car at one shock; as the result of which we substituted iron, and since then have had no trouble from that cause. I am not in favor of the shape of the wedge shown, insofar as the recesses on the top of the wedge are concerned which are put in for the purpose of saving metal in the manufacture of that wedge. You can see that the line on which the wedge carries the greatest strain there is the least amount of metal. That wedge wears into the top plate of the oil box, and we should have as much metal as it is possible for us to obtain, for the purpose of securing the greatest amount of wearing metal.

E. A. Millar, (B. & M.): In line with what the last speaker said, and in connection with the report of the Committee, I would say that one of these cars is on the line I am connected with, with a journal bearing split in two. It only traveled 15 miles after it was loaded. This was not strong enough to carry the load.

C. A. Schroyer: Was it the bearing or the wedge.

E. A. Millar: They both failed.

F. F. Gaines, (C. of Ga.): I move that the committee be continued for another year, as they promise additional work on the lines involved. that the last item be submitted to letter ballot, and that the committee, before sending this letter out to ballot, take into consideration the remarks made about the wedge this morning.

T. M. Ramsdell, (C. & A.): Our experience with a wedge of this design is that the bearing face at the end is not sufficiently strong to stand the underthrust of the journal; that the metal should extend clear across the face of the wedge, instead of being cut out.

R. L. Kleine: I cannot understand Mr. Millar in regard to his split of the journal-bearing. Why did it split? There are upwards of 1,000 cars running with a bearing and wedges as herein shown, and we have had no trouble whatever, and there must have been some abnormal condition in his case. However, speaking for Mr. Wallis of the committee, the Committee has taken into consideration the question brought out by this wedge, and about changing the design of this wedge to conform to the outline of the present 5½ in. x 10 in. wedge.

E. A. Millar: There was no abnormal condition. The

journal had not run hot. It had a solid bearing and was on a 100,000 lb. car with 5½ in. x 11 in. journal.

J. J. Tatum, (B. & O.): We have had over a thousand of those, and we have never had such a failure. I believe the Penna. and the B. & O. are operating a greater number of that class of equipment, and our experience has been that the recommended practice as herein shown and suggested, has given satisfaction.

I. S. Downing: As this seems to be on coal cars that are dumped in a coal-dumping machine, we have found on investigation, that in dumping the car upside down, the waste gets under the bearings ,and when you run again, you get a hot box. I thought it might be possible to cast a lug on the side of the box to tend to hold that waste down on coal cars. We had the same trouble with the 80,000 and 100,000 lb. capacity car, that are put through the coal dumpers.

(Mr. Gaine's motion was put and carried).

TRAIN LIGHTING.

The committee makes the following suggestions for recommended practices:

AXLES FOR AXLE DYNAMOS.

Axles for application of axle pulleys should be in accordance with the following three designs: First, axle in accordance with M. C. B. standard, rough-turned; second, axle straight between the wheel-fit collars, rough-turned; and third, axle with straight pulley fit. In any of these designs the axle pulley as recommended in paragraph 18 of recommended practices can be applied with the proper bushing.

NOTE.—The committee feels that the question of design of axles should be left to the mechanical men of the individual railroads in question.

STANDARD DESIGN OF AXLE-DYNAMO SUSPENSION.

Axle-dynamo suspension must be designed so that with full diameter wheels and truck on straight, level track, any part of the dynamo or suspension must have a clearance not less than 6 in. above top of rail, and a clearance of at least 3½ in. between any part of the mechanism attached to the car body.

In axle-dynamo suspension the metal carrying the weight of the dynamo must not be subjected to wear.

In axle-dynamo suspension, if side arms are used, the end to be secured to the truck frame must extend under transom and be bolted to the side frame near the transom, and if carried through or over end sill, must be held securely to end sill by a hooked bolt not less than ¾ in. in diameter.

When possible, the belt should go over the end sill and under the brake beam with belt clearances of at least one inch.

A typical design covering the above recommendations is shown herewith and recommended where applicable.

NOTE.—On account of the variety of trucks and car designs, it is impossible for the committee to recommend a standard suspension which will meet all conditions.

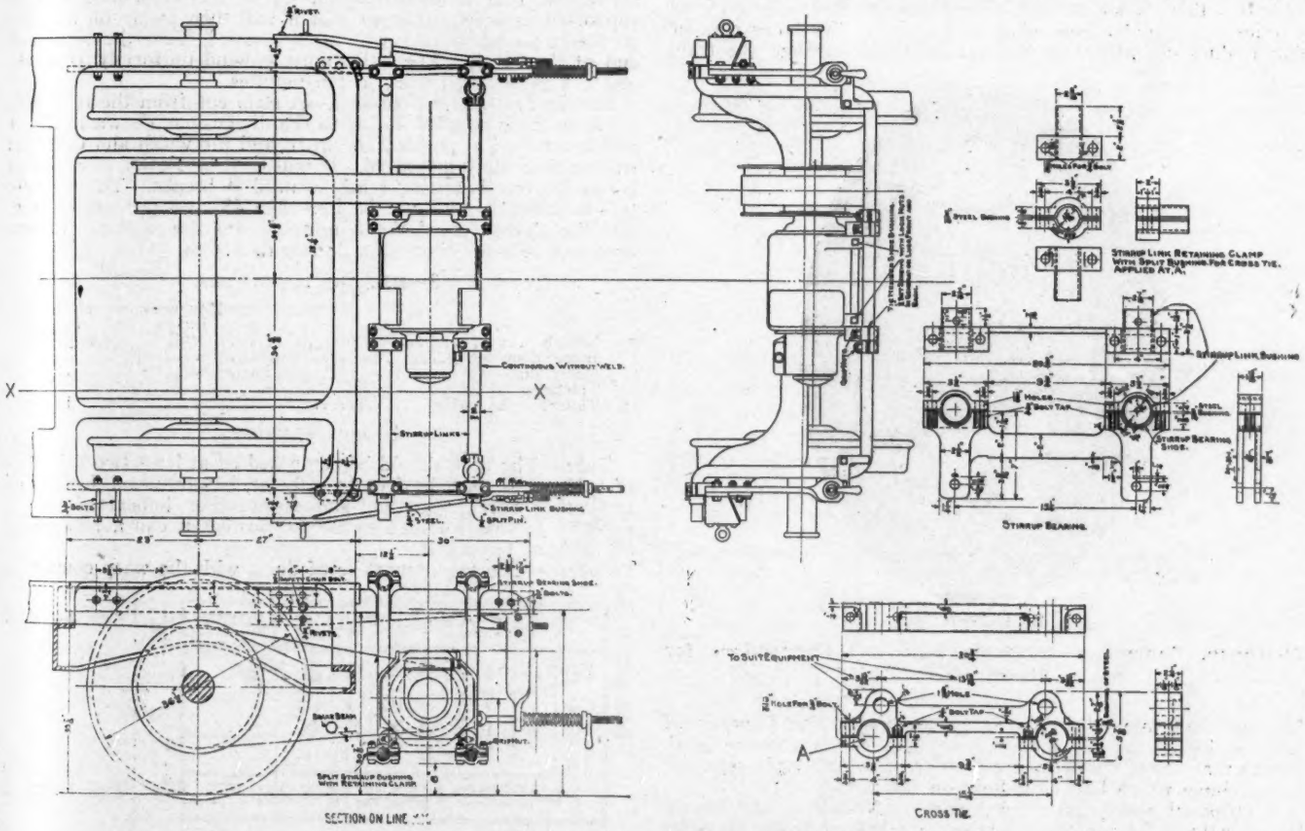
STANDARD DESIGN OF BATTERY BOX.

The inside clear dimension of battery boxes should be as follows:

Depth, front to back, 2 ft. 4 in.
Height in clear, not less than 21½ in.
length of compartment for two standard double-compartment tanks or equivalent, 22⅝ in.
L. ngth of compartment for four standard double-compartment tanks or equivalent, 3 ft. 9¼ in.

Battery boxes with two compartments each 22⅝ in. long, or with one compartment 3 ft. 9¼ in., must be designed to safely carry a battery weight of 1,600 lbs. Battery boxes with four compartments each 22⅝ in. long, or two compartments each 3 ft. 9¼ in. long, must be designed to safely carry a battery weight of 3,200 lbs.

That in all battery-box designs, two angle irons or straps shall extend longitudinally under the battery box in such a location that in case of a defective battery-box floor the battery trays will be supported by these angle irons or straps; the angle irons or straps shall be supported to the car body independent of the battery box proper and shall be of sufficient strength in all parts to safely support the battery in accordance with the weight shown in the previous paragraph and the additional weight of the battery box proper, and the angle irons or straps and the supports for same shall be so installed that they can be readily inspected for corrosion.



Dynamo Suspension, Link Type Belt Drive.

MAINTENANCE AND REPAIRS OF BATTERIES.

The following repair instructions were forwarded to the Secretary, to be referred to the Arbitration Committee for insertion in the Code of Rules:

"For repairs to electric lighting equipment on cars in interchange or leased cars, the instructions issued by the manufacturers of the apparatus should be strictly adhered to. In the absence of any agreement, the material furnished and applied must be of the manufacturer's make."

In addition to the above, the Committee beg to make the following recommendations:

Under the caption of axle dynamo, the following should be added to paragraph 18:

"Diameter of axle pulleys should preferably be 17 in. or 21 in.; the diameter of generator pulley should preferably be 8 in. or 11 in."

Under the caption "Axle Dynamo," following paragraph 19, should be added the following:

"The electric connector between dynamo leads and permanent wiring on the car should be made with non-reversing self-locking receptacle and plug."

The report is signed by:—T. R. Cook (Penna.), chairman; C. A. Brandt (C. C. C. & St. L.); Ward Barnum (L. & N.); D. J. Cartwright (L. V.); E. W. Jansen (Ill. Cent.); J. H. Davis (B. & O.), and C. H. Quinn (N. & W.).

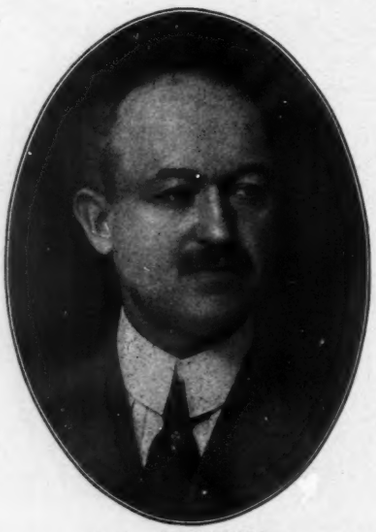
Mr. Cook presented the report and continued as follows:

In order to facilitate the handling of this report, I move that the items be referred to the Association by letter ballot by paragraphs. (The motion was carried.)

TRAIN PIPE AND CONNECTIONS FOR STEAM HEAT.

Proposed Specification for Steam Heat Hose.

The committee was continued to give consideration to this subject. It has gone into the matter very thoroughly and from previous tests, which have been reported to the Association, finds that there is so little difference between the opening in the medium-size coupler and what is known as the large coupler that it does not affect the passage of steam through the train



I. S. DOWNING,

Chairman, Committee on Train Pipe and Connections for Steam Heat.

line sufficient to warrant the large coupling. The adoption of what is known as the medium-size coupling is recommended. It also recommends a two-piece coupler, with the nipple separate, and a clamp which holds the hose on the nipple by friction.

A proposed specification for the steam-heat hose and steam-hose couplings for passenger cars is given below. Inside diameter 1⅝ inches as adopted as recommended practice in 1903.

1—MANUFACTURE.

Steam-heat hose must be composed of a tube of rubber, wrapped with five-ply cotton fabric and the whole covered with rubber.

2—PHYSICAL PROPERTIES AND TESTS.

The railway company's inspector will select for test one piece at random from each lot of 201 pieces. When this hose is received at the test laboratory, a section 2½ in. long will be cut from one end in order to determine the friction, tensile strength and elongation. The remaining portion will then be subjected to steam heat in the digester. After this section has been heated another section 2½ in. long will be cut from it and used to ascertain the friction, tensile strength and elongation, in order to show the change in these characteristics due to the action of heat.

Friction Test Before Steaming.—A section 1 in. long will be cut from the hose and supported in such a manner that it will turn freely on its axis. A twenty-pound weight will be suspended from the separated end of the fabric. The latter must unwind uniformly, if at all, and not faster than 6 in. in ten minutes.

Tensile Test Before Steaming.—A strip cut from the tube with a die or other suitable means to the dimensions shown in Fig. 1 will be marked at points 2 in. apart, and the width and thickness will be accurately measured. It will then be slowly

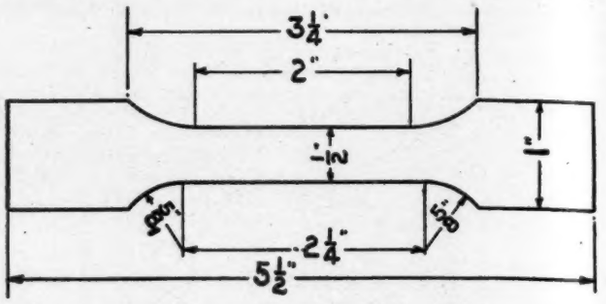


Fig. 1—Tensile Specimen.

stretched in a suitable tensile-testing machine until it breaks. The ultimate tensile strength must not be less than 600 lbs. per square inch and the elongation of the 2-in. section at the time of fracture must not be less than 6 in.

Friction Test After Steaming.—A section 1 in. long will be supported in such a manner that it will turn freely on its axis. A fifteen-pound weight will be suspended from the separated end of the fabric. The latter must unwind uniformly, if at all, and not faster than 6 in. in ten minutes.

Tensile Test After Steaming.—A strip cut from the tube with a die or other suitable means to the dimensions shown in Fig. 1 will be marked at points 2 in. apart, and the width and thickness will be accurately measured. It will then be slowly stretched in a suitable tensile-testing machine until it breaks. The ultimate tensile strength must not be less than 450 lbs. per square inch, and the elongation of the 2-in. section at the time of fracture must not be more than 8 in. or less than 4 in.

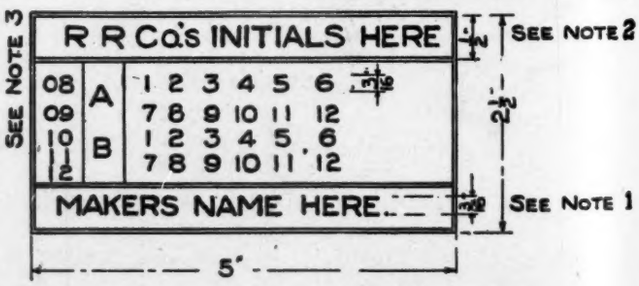
3—SIZE AND DIMENSIONS.

	Maximum, Inches.	Minimum, Inches.
Length	24¼	23¾
Inner diameter	....	....
Outer diameter	....	....
Thickness of tube	....	⅛
Thickness of cover	....	1/16

4—WORKMANSHIP.

Tube.—The tube should be composed of at least two calenders of rubber. It must be free from holes, bits of wood, bark, sand and other foreign matter, and from other imperfections. It must be so firmly joined to the fabric that it can not be pulled off without tearing it.

Fabric.—The fabric must be of duck, with the warp containing



NOTE:—
No.1- MANUFACTURERS NAME TO BE PLACED IN THIS SPACE IN ⅜" LETTERS.
No.2- RAILROAD CO'S INITIALS WILL BE FURNISHED WITH INDIVIDUAL ORDERS.
No.3- THE FIRST FIGURE IS TO BE THE YEAR WHEN HOSE IS MADE. FOLLOWING FIGURES ARE TO BE SUCCESIVE YEARS.

Fig. 2.

not less than 27 strands, 3 threads per strand, and the filler 18 strands and 4 threads per strand. It must be frictioned on both sides and have, in addition, a distinct layer of rubber on one side, readily visible between the plys when the finished hose is cut open.

Cover.—The material of the cover should be a rubber compound which has good weather-resisting qualities, as firmly

attached to the fabric as is the tube, and to be equally free from defects. The end of the hose should be cut off true to length, but shall not be capped.

5—MARKING.

Serial Number.—Each lot of 200 hose or less must bear the manufacturer's serial number, beginning with one on the first of each year and continuing consecutively until the end of the year. Serial numbers of hose which are rejected must not be used again. With each lot of 200 hose or less, one extra piece of hose must be furnished free of cost.

Label.—Each piece of hose must have securely vulcanized to it a label of white or red rubber, as shown on Fig 2. The letters and figures in the badge plate must be 3/16 in. high and 1/32 in. in relief, except in serial number, which must be 1/2 in. in height and 1/32 in. in relief.

6—INSPECTION.

Rejection.—If the sample fails to pass the above tests, the lot represented by it will be rejected, and the same serial number must not be applied to any other steam hose during the same calendar year.

Inspection.—If the sample passes all the tests, all pieces

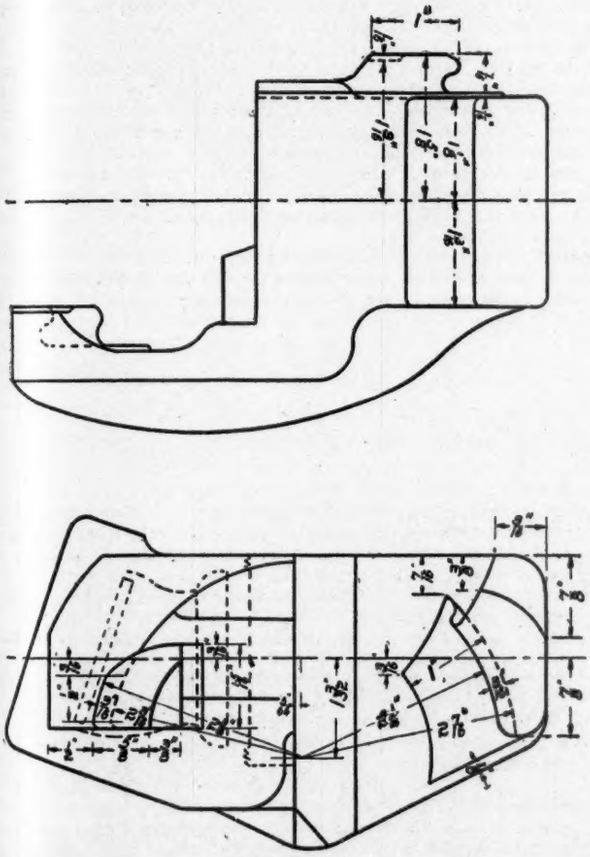


Fig. 3.

represented by it will be accepted if free from injurious mechanical defects.

Rejected hose will be returned at the expense of the manufacturer.

You will note, paragraph 3, dimensions—the committee has not recommended inner or outer diameter. It does not feel that the adoption of the specification need be delayed on account of this and hopes the association will approve of the recommendations. If this is done, the committee has in mind the running of tests of hose made under these specifications, with inside diameter 1¾ in. with six-ply, 1⅝ in. with five-ply, 1½ in. with ends expanded five-ply.

The committee recommends that these tests be conducted by the Committee on Specifications for Air Hose and that this committee be discharged.

STEAM HOSE COUPLINGS.

1. Coupling contour to be such that coupling will interchange with the coupler as shown on Fig. 3.

2. Coupler must have a locking attachment which will securely lock the two couplers together without depending on the hose in any way.

3. The angle of the nipple to a line perpendicular to the coupling face of the coupling should not be less than 20 degrees.

4. The coupler should be of the two-piece type, having the nipple separate and, screwed into the coupler head with 1½-in. pipe thread. The nipple shall be of the type having a shoulder to engage clamp-nipple shown on Fig. 4.

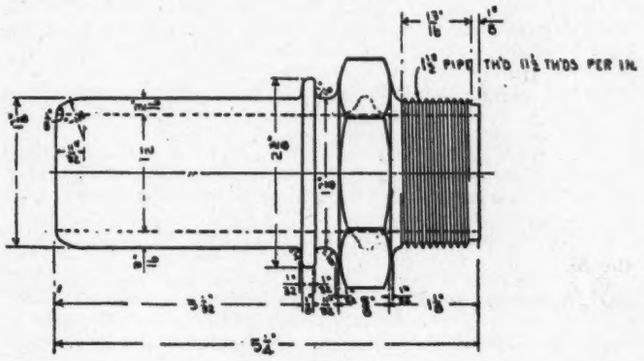


Fig. 4.

5. The clamp shall be of the two-piece type, as shown on Fig. 5.

6. The minimum diameter of hose through the gasket to be 1 1/16 in.

7. Gasket shall be flat face, securely held in place in coupler head, but so designed that they can be removed and replaced without removing the hose or coupler head from the car.

The report is signed by:—I. S. Downing (L. S. & M. S.),

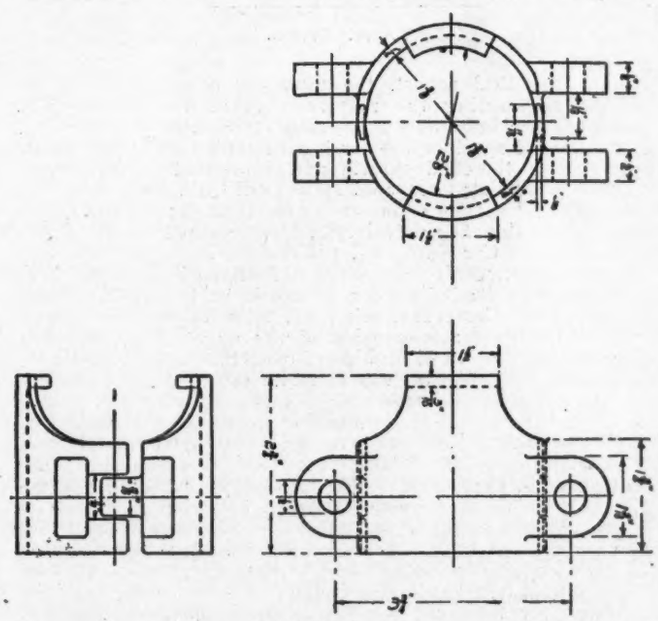


Fig. 5.

chairman; C. A. Schroyer (C. & N. W.); T. H. Russum (B. & O.); J. J. Ewing (C. & O.), and W. C. Arp (Vandalia).

DISCUSSION.

F. F. Gaines, (C. of Georgia): I think this is one of the things we need to get down to standard, especially the coupler and the specifications for steam hose. The report of the committee is thorough, and I move that the two recommendations, one for standard specification for steam hose and the other for coupler, be referred to letter ballot for recommended practice.

I. S. Downing: There is another recommendation I failed to mention—we did not give the inner or the outer dimension of the hose. We find some are using 1¾ in., others 1½ in. and others 1⅝ in. Now, either of those diameters can be used with this nipple; and we recommend that they be turned over to the air-hose committee to be followed up, and this committee discharged.

President Fuller: Is the outside diameter mentioned?

I. S. Downing: The roads using 6-ply outside diameter claim that they get away with kinking absolutely; while with the others there is a lot of kinking. We feel that this other committee on

air hose could test out those three sizes to determine whether we should get 5-ply, 1½ in., or 6-ply, 1¾ in.

C. A. Schroyer (C. & N. W.): In connection with the steam-hose specifications I am afraid they will put us through the same course of sprouts as the air-brake hose specifications did, and if the adoption of this as a recommended practice, which will be followed by having it for a standard practice, is going to cause the rejection of the cars because they have not the same kind or brand on the hose that the specifications call for, it will put us in the position of the air-brake matter, where simply because a brand does not comply with the regulations of the association, it could not be received; and that cost the railroads of the country thousands and thousands of dollars.

I. S. Downing: As far as Mr. Schroyer is concerned, that will not affect matters until we get it into the M. C. B. rules. There is no reason why we should force roads to do this. It is a guide for roads not having chemists and engineers' tests for such matters; and then it is well for them to have the M. C. B. back of them.

C. A. Schroyer: The Committee is not recommending any given inside diameter of hose. Now, the Northwestern Railroad, in the use of air-brake hose, always purchased 1¼ in. inside diameter for freight car use, with the expanded end sufficiently expanded to meet the requirements of the nipples used by us. After that was changed and we bought an air-brake hose 1½ in. or 1⅝ in. straight through, which the manufacturers claim would not cost us any more money than the 1¼ in. hose with expanded end. We have found we have paid ¾ of a cent to a cent and a half more because of that increased inside diameter of the hose.

F. F. Gaines: I think Mr. Schroyer is unduly worried about this thing. We are not going beyond recommended practice.

(Mr. Gaines' motion was put and carried.)

TANK CARS.

Since the 1912 report, the tank car committee has approved, as meeting the requirements of the Master Car Builders' specifications for "Special" tank cars:

Design and specification for lagged tank car for the transportation of liquefied chlorin gas, submitted by the Goldschmidt Detinning Company, New York City.

Design and specification for lagged tank car for the transportation of liquefied petroleum gas, submitted by the Pennsylvania Tank Car Company, Pittsburgh, Pa.

The committee also approved a design of cast-steel vent with frangible lead disk, for sulphuric acid tank cars, submitted by the Crescent Tank Line, New York City.

The committee also considered the question of the handling in tank cars of bisulphide of carbon, which is highly inflammable, and gives off vapors under tension. As, however, the vapor tension came within the requirements for "Ordinary" tank cars, and as the chief inspector of the Bureau of Explosives saw no objection to the handling of this product in ordinary cars, the committee advised the Taylor Chemical Company, Penn Yan, N. Y., that there was nothing in the rules governing the transportation of materials in tank cars to prevent the handling of bisulphide of carbon in tank cars which meet the requirements of the M. C. B. specification for "Ordinary" tank cars.

The committee has still pending:

Design for tank car for casing head gasoline submitted by the German-American Car Company, which has not been approved by the committee, pending revision of the drawings.

Also, question as to the use of existing tank cars for the transportation of ammonia solutions. In the case of this product it develops that the vapor tension at 100 degs. F., may be as high as 22 lbs. per sq. in., and that the variation in the bursting pressure of lead disks nominally intended to rupture at 25 lbs. is that such a disk might rupture at 22 lbs. Consequently, after consultation with the chief inspector of the Bureau of Explosives, it has been decided that the lead disk should be made for a nominal bursting pressure of 30 lbs. This pressure would not in any way injure the tank, whereas the rupture of the disk would permit the loss of the most valuable constituent of the solution, viz., the ammonia gas. In view of the information that the life of tanks carrying ammonia liquors is much shorter than that of petroleum-carrying cars, the committee thinks it wise, for the present, to require retests at intervals of not over five years. These changes have been covered in the revision of the Tank Car Specifications.

As regards the tests of tanks and safety valves now provided for by the tank car specifications, the committee feels that some improvement should be made on the present practice, by requiring that a certified record of the tests shall be available in some one office. Heretofore the rule has been that the railroad on whose line a car is at home shall exercise supervision. The importance of these tests will be very great in the event of law suits following damage, and your committee believes that the office of the chief inspector of the Bureau of Explosives would be the proper place for the filing of these certificates. Considering the fact that the Interstate Commerce Commission requires that tank cars shall conform to the rules of the Master Car Builders' Association, it is highly probable that a ruling will be made by the commission, fixing the procedure to be followed in reporting the tests of both cars and valves.

Nothing has transpired during the past year to call for any radical changes in the tank car specifications. The changes which the committee recommends are principally with a view to removing ambiguities.

The report is signed by:—A. W. Gibbs, (Penna.), chairman; C. E. Chambers, (C. of N. J.); S. K. Dickerson, (L. S. & M. S.); J. W. Fogg, (B. & O.); E. J. Searles, (B. & O.); Wm. Schlafge, (Erie); Thos. Beaghen, Jr., (Union Tank Line), and C. A. Shoemaker, (Ger.-Am. Car Lines).

DISCUSSION.

Mr. Hartley, of the Summit Solvay Company, was given the privilege of the floor.

Mr. Hartley: There is one thing we would hesitate to follow in the tank car specifications and that is the recommendation which you have put in simply as a preference, as to how you shall anchor a tank on the underframe. We continued to hold our tank in place with head blocks instead of anchoring the tank to the underframe with saddle riveted to the underframe. Our belief is that in the tanks as we ship those products, that very often the rivets in the saddles anchoring the tank would simply be tight under the heads, and not fill the holes.

After the rows of nuts had been eaten away under the head of the rivet, we would have a very annoying leak which is a very expensive one to stop. It was suggested that the end sills were being distorted by the movement of the loaded tank. We tried to overcome that by getting 55 lb. channels in our centre sills, and we are greatly increasing the sectional area of the central sills over the requirements, and also have the head block reinforced and have two heavy steel castings.

We test all our tanks every 3 years instead of every 5 years. We test some of our tanks every trip before they are loaded, purely as a matter of operating policy. We think it is better to do so in some cases. I understand that the requirements in the case of tanks to be built from now on is that they shall stand a bursting pressure of 240 lb., and be subject to a test pressure of 160 lb. We believe if a factor of safety was introduced, there would be no evading the design or the strengthening of that tank.

It is possible that the tanks could be made safe to sustain the bursting pressure of 240 lbs. by butt strapping and the use of a high tensile strength material, and the use of lighter plates, which however, would not make as good a tank to stand corrosion. The lighter shell plate would undoubtedly corrode somewhat more quickly, and perhaps the tank would not be good for 5 year service. However, in the majority of cases we believe the test once every 5 years ought to be sufficient for the larger number of tank car users, but a factor of safety introduced into your requirements would actually insist that the tanks should be made of certain materials, and perhaps even the thickness of the materials should be specified, that would carry with it automatically its high bursting pressure.

(The recommendations were referred to letter ballot and the executive committee was instructed to take the recommendation in regard to the filing of the tank car tests, up with the Bureau of Explosives.)

SPECIFICATIONS FOR FREIGHT CAR TRUCK SIDES AND BOLSTERS.

In the committee's first report, presented at the 1912 convention, it proposed for truck sides and bolsters specifications concerning the manufacture, chemical properties, physical properties, and inspection of truck sides and bolsters. By subsequent action these specifications have been added to the recommended practice of the Association. In its first report the committee also proposed tentative specifications for tests of truck sides and bolsters. It recommended that if the committee were continued, funds be provided for making tests, in order to develop information

which could form the basis for final specifications for testing truck sides and bolsters. The executive committee of the Association has not found it feasible to provide funds for this work during the past year and the committee has, therefore, been unable to make progress along the lines originally laid down. In the expectation that during the coming year funds may be made available to carry on this work, we recommend that the committee be continued.

E. C. SCHMIDT.

Chairman, Committee on Specifications for Tests of Steel Truck Sides and Bolsters for Cars of 80,000, 100,000, 150,000 Pounds Capacity.

The report is signed by:—Edward C. Schmidt (Univ. of Ill.), chairman; J. S. Sheafe (Ill. Cent.), and C. D. Young (Penna.).

(The report was referred to the executive committee and the committee instructed to work jointly with the committee on freight car trucks.)

RETIREMENT OF 20- AND 25-TON CARS FROM INTERCHANGE SERVICE.

The question of the use of cars of 40,000 lbs. and 50,000 lbs. capacity in interchange is one that is being considered very seriously in different parts of the country, and it has been suggested that it be taken up and discussed at the convention. The suggestion is made that the subject be given a thorough airing at the convention, and if thought advisable, to take the matter up with a view to ascertaining whether it is practicable at this time to withdraw from interchange service all cars of 40,000 lbs. and 50,000 lbs capacity, and restrict their use to the owning line.

Signed—Jos. W. Taylor, Secretary.

President Fuller: This is a subject, gentlemen, that I believe warrants more than passing notice. We all know, especially in the mountain countries, that the light capacity cars are getting in our heavy tonnage trains ,and it is believed by a good many that a large number of these cars should be confined to their home lines, and not used for any interchange work. We will in the West notice particularly that a large number of cars loaded to the coast and which have to go over the mountains, by the Eastern roads, are very old, light-capacity cars and it is necessary for us to either transfer the load or take the chances of hauling these light cars. From the point of safety, if nothing else, as well as economy, we believe that every effort should be made to keep the light capacity cars, 40,000 and 50,000 lbs., at home where they belong.

F. W. Brazier, (N. Y. C. Lines): I believe we should set a date in the very near future that cars of 50,000 lbs. capacity and under will not be accepted in interchange. I realize in the past year there has been a great shortage of cars. However, the light capacity cars that are in service to-day are not strong enough to be handled in trains with heavy equipment. The draft attachments and construction of the cars are such that they are constantly being sent to the shops for repairs. I have recently received a letter from one of the large trunk lines calling attention to the number of foreign cars repaired and his records show that 50 per cent. of the total number of cars receiving repairs were foreign cars. I find on our own system that our percentage of foreign cars repaired runs very much higher than this, in fact, our percentage of foreign cars is about 60 per cent. Another important point is many railroads to-day are not making proper repairs to the equipment and are maintaining certain parts of cars that are expensive, if not obsolete they are repaired one day then go on the repair track again in a few days doing the same work over and over again. It is all very well to save a few dollars on the first cost, but is it a wise policy to build cars that will not stand two years service without being practically rebuilt and the money saved on the first cost is spent ten times over in maintaining them. I refer particularly to cars built of steel construction with the view of keeping the light weights down to the lowest possible point, the result is, there are in this country some steel cars and steel underframe cars that are really weaker than the old standard wooden cars.

I want to refer to matters that were brought up last year, that is the condition of box car doors on freight equipment and other parts of cars that are constantly needing repairs, and when they do receive repairs, the parts that fail are simply perpetuated, no aim taken to improve the defective parts, the results are they only make a short mileage before they go to the repair tracks for the same defects caused by not improving the parts that fail.

We had quite a number of accidents caused by light arch bars and arch bar bolts not properly fastened giving way, and it might interest this convention to know that during 30 days in the months of February and March on the Western District alone, we used a little over a ton of nuts a day and these were applied to trucks on loaded cars received in and around Buffalo to make them safe to run over our lines. It has been advocated and recommended for years that on all forms of trucks that depend on bolts to hold them together, that attention should and must be paid to keep the nuts in proper place. You are aware that this is an owner's defect. I firmly believe that all arch bar type of trucks should have proper nuts put on the bolts and a spring cotter or a spring key put into every bolt to keep the nut in place, and if the spring cotter is properly applied, there will be no danger then of the arch bars spreading.

I desire to emphasize again the importance when getting up designs of cars and trucks of paying more attention to the cost of maintenance and overcome the weak features in construction that are so apparent on railroad equipment throughout the country. The question again comes in of the first cost. Were cars designed with the thought of keeping them off the repair tracks instead of saving the first cost, when they are built, it would be money well invested. More care should be taken to watch the defects spoken of here in this paper and others too numerous to mention that would in the end save hundreds of thousands of dollars throughout the year in the cost and maintenance of freight equipment and help reduce periodical car shortage in that the cars will be carrying freight instead of awaiting and undergoing repairs.

I therefore make the following motion:

After January 1, 1915, cars of 50,000 capacity and under, will not be accepted in interchange unless such cars are equipped with steel underframe and all metal trucks.

C. F. Giles (L. & N.): We have 958 refrigerator cars, 40 ft. in length, 50,000 lb. capacity. These cars have metal-body bolsters and all metal trucks. They are comparatively new. They are used in the banana and fruit trade, and we feel there should be an exception made in connection with refrigerator cars in which fruit is handled.

J. J. Hennessey (C. M. & St. P.): It seems to me the way this question has been put before the convention, it is hardly the correct proposition, the question of barring cars on account of light capacity. I can show a great many figures on any class of cars you want to put up. It is not the capacity of the car which should count. There are any number of 60,000 lb. cars built, and in service, with the old wooden bolsters and the short draft timbers. Then you got away from the old wooden bolster, and put in the cast wheel bolster, but you did not increase the length of your draft timbers, you did not increase the number of your bolts. There are many of the 40,000 and 50,000 lb. capacity cars which have long draft riggings, continuous side sills, the side sills running the full length of the car. That car, in my opinion, is a better car in interchange than a car with a poor set of draft timbers. How many stock cars are there of 40,000 or 50,000 lb. capacity? How will you load them beyond the capacity while they are in the service they are fit for? I think, if we do anything at all, we had better confine ourselves to the draft timber construction, the character of the draft timber, and the draft springs. I do not think it would be wise for this association, and I do not think the association is in a position to say that we will not use a certain capacity car. Every road, under rule 2, has a right

to reject any car they do not consider safe to run over their lines, and I do not believe we can go any further, gentlemen.

D. R. MacBain (L. S. & M. S.): I want to endorse every word that Mr. Brazier has said. The idea of this movement is to bring the whole standard of equipment up after a certain time, so that it will be better than it is at the present time. There are a great many railroads in the country that are spending large amounts of money to bring their equipment up to a point where it will stand modern operation and modern handling in long trains, and hump yard service, but there are, on the other hand, a considerable number of roads which do not have the long trains and do not have the hump yard service, which are not doing this. Possibly, too, this small equipment in the hands of such railroads is suitable for the district in which they are operated, but when it comes to the matter of interchanging freight cars on railroads like the New York Central lines it becomes a serious proposition.

The New York Central lines never operate more than 50 per cent. of their own equipment on their own rails. The other 50 per cent., or a little less, is foreign equipment, hence the chances for failure due to light construction of draft gear, etc., is very great. A short time ago I obtained a report of all draft gear and draft bar failures that occurred from April 15 to June 1. Briefly stating the matter, by totals, there were 47.6 per cent., outside of the New York Central Line's cars, operated on the Lake Shore and Michigan Southern Railroad, and out of that 47.6 per cent. there were 73.8 per cent. of the drawbar failures which occurred on the foreign equipment. That is why, gentlemen, we are trying to bring about a better standard. Now in connection with this whole thing, I want to state that the New York Central Lines have adopted a policy in the maintenance and repairs of their cars which is designed to bring the equipment to the highest possible plane of efficiency, a standard which we believe will be suitable for all the conditions of modern service. I want to endorse strongly what Mr. Brazier said regardless of any arguments to the contrary.

F. F. Gaines (C. of Ga.): I not only want to endorse what Mr. Brazier and Mr. MacBain said, but I want to comment on what Mr. Hennessey said: Our experience is that the low capacity cars are not in line with the other cars, and we found it so much so that our operating department put an order into effect whereby if we get a car in interchange less than 60,000 lb. capacity, we consider it more economical to transfer the load rather than to handle the light capacity car.

R. E. Smith (A. C. L.): I inquire as a matter of information, whether this Association has the authority to pass the resolution which has been offered? It seems to me that the owners of railroad properties in this country ought to have the first say in this matter. It seems to me that this matter being, to a very considerable extent a transportation matter, that the movement for the retirement of low capacity cars ought to start from some other source than this Association.

As far as the line with which I am connected is concerned, we unfortunately have a number of low capacity cars, but they were designed and built for a class of commodity that cannot be loaded in high capacity cars, not even 60,000 lb. or even 50,000 lb. cars. I am speaking now of perishable fruit of which we handle a very large amount. In the case of these 40,000 lb. capacity cars, we are very materially improving their sub-structures and the draft arrangement, and we are bringing these 40,000 lb. capacity wooden cars up to the same degree of strength and improved design as we practically have in the case of our 60,000 lb. wooden cars, which were built a few years ago. We have gone to the extent of putting in 6 in. centre sills and 1¼ in. branch bolts and improved the draft gear.

C. A. Schroyer (C. & N. W.): I question very seriously as to whether this association has the authority to say that on a certain day we will not accept certain cars of certain capacity in interchange. It might be well enough for us to recommend to our superior officers a rule of that kind, which they can indicate, would be put in force on a certain day. The 40,000 and 50,000 lb. cars are going out of service very rapidly. There are no more of them being built, and those which are in operation today were built of such class of timber as cannot be produced today. Many of these cars are built with ten to twelve ft. draft timbers, the draft timber extending between the upper and lower plate of the body bolster, and as a draft apparatus, aside from the element of the coiled spring now in there, there is no better apparatus which was ever put into a car. I would prefer that 12 ft. draft timber with the coiled springs than I would many of the heavy modern built steel cars, with coiled spring draft apparatus in them. We would have less trouble. We have about 10,000 cars of 50,000 lbs. capacity. You can put on just as poor side doors on a 100,000 capacity car as was ever put on a 40,000 lb. capacity car. The whole proposition applies more generally to the general upkeep of the car.

D. F Crawford (Penna.): I agree with both sides of the argument. For some time past I have been following up what we call "truck accidents." The conditions on the Pennsylvania Lines, West, are quite similar to those on the Lake Shore in that approximately 50 per cent. of our traffic is handled in foreign cars. Since 1904 I have had a monthly report of truck accidents. I regret to say that 80 per cent. of the truck accidents occur on foreign cars brought to our lines. I feel that this association is the proper association to bring this subject up, but not the proper association to decide it. I would move that a committee of this association obtain from each of the members the situation as to each of their cars, and ascertain if it will not be possible to make a recommendation to the American Railway Association which will permit, that for the benefit of the traffic conditions of the country, we may set aside the older cars which are giving every one of us trouble that are moving them.

I. S. Downing (L. S. & M. S.): I want to agree with Mr. Hennessey as to what he says about some of the heavier cars. I think that the 50,000 lb. capacity cars and under, are not being properly maintained and should be taken out of service. There are cars heavier than these, with short draft timbers, which are not as good as some of the lighter capacity cars, as far as draft timbers are concerned. I think we should legislate to take these short-draft timber cars out of service in the near future.

M. K. Barnum (Ill. Cent.): I second Mr. Crawford's motion. I do not think there is anyone in this room who will contend that the 40,000 lb. or 50,000 lb. capacity car is sufficiently profitable to maintain and operate, or that we are justified in keeping up these cars beyond their normal life, as many have been kept in service up to the present time. Some of these cars are 25 years old. They are going into the heavier modern trains with better equipment and jeopardizing the better equipment, and I venture to say that not a day passes that some one of these cars does not double up and damage many thousands of dollars worth of modern cars besides the track, lading and other railroad property.

The road with which I am connected has had a very serious time with this class of equipment. About 54 per cent. of the cars in service on the road have been foreign cars during the last six or eight months, and a very large percentage of bad order cars have been taken out of that number, even though we have given them preference in making repairs. In the case with Mr. Giles mentions, that of the refrigerator cars, of course the refrigerator cars would be excepted from any action taken. In my opinion, one of the principal causes of the increasing cost of freight car repairs is the larger and unwarranted amount of money spent in maintaining the old light capacity cars.

H. J. Small (So. Pac.): These small capacity cars are passed on out to the coast, and there is nothing to do with a great many of them but to dump them in the Pacific Ocean, and that is what we feel like doing with a large number of them. We have considered that the 40,000 lb. capacity car is obsolete. We have placed the value of a 40,000 lb. capacity car at $100. If it costs more than that to repair it, we break it up. We fixed up an arrangement among ourselves to keep the cars on our own rails, and I think we have succeeded to a very great extent. We ought to adopt the idea contained in this circular letter. We are great sufferers on account of this. These cars come out to us 3,000 miles over the mountain grades with Mallet locomotives hauling them and by the time they get to San Francisco or Los Angeles, it is a pretty difficult proposition to repair them so that they can go back east, which we are obligated to do, or to pay for the cars.

J. J. Tatum (B. & O.): I believe our company would advocate the recommendation made by Mr. Brazier. It has been said that it would not be within the power of this organization to legislate the 40,000 lb. and 50,000 lb. capacity cars out of the interchange of cars. As I understand Mr. Brazier's recommendation, that is not its object. He has suggested that the cars would be accepted if equipped with steel underframes and all metal trucks. If that is the case, I think the Association has just as much right to render such a decision in regard to applying steel underframes and legislating the use of wooden 40,000 lb. an 50,000 lb. capacity cars out of interchange, as they have the right to say that they will not after a certain date, accept cars not equipped with the American Continuous draft gear.

C. A. Schroyer: No one with any of these cars is advocat-

ing their rejection from interchange, and those opposing it are the only ones who own lots of these cars. It is not for you to stand in judgment on these cars, or on the roads that have them; or to ask why they cannot destroy them and get others. I hope the chief representatives of this association will canvass among their officers as to what their wishes are in regard to this matter; and when we come here next year, reinforced by their wishes, then we are in position to say that after a certain day we will not accept a certain car of that kind, but we cannot do it until we are so reinforced.

M. K. Barnum: The effect of this movement means to check the interchange of these cars, and consign them to the scrap heap unless you wish to continue them in service. But I do believe that the time has come when some more definite action toward retiring these light capacity cars should be taken. Therefore, I second Mr. Crawford's amendment to Mr. Brazier's motion.

R. L. Kleine: The reason the roads that handle the heavy equipment today do not have the 40,000 and 50,000 lb. capacity cars in service was that they were compelled to take them out of service, and are still doing it; and therefore it is an injustice to place on these roads in interchange, these 40,000 and 50,000 lb. capacity cars, which are liable to result in accidents. Furthermore, on the door question, the situation is so serious that irrespective of the interchange rules, it is almost necessary to put a prohibition on that account. We all have got to put our shoulder to the wheel and do something more to put the car door in safe condition for transportation.

Samuel Lynn, (P. & L. E.): Our road doesn't have 40,000 and 50,000 lb. capacity cars. We did have thousands of them, but we have got rid of them; and every car up to 60,000 lb. capacity, that requires $100 or $150 repairs, must be torn down. There is another thing in connection with delegating a car to the scrap pile—a number of industries are refusing to load 40,000 and 50,000 lb. capacity cars.

F. W. Brazier: Some of our roads are furnishing your roads with 100,000 lb. cars, and you send your 60,000 lb. ones to us. I touched on the condition of car doors and trucks and general repairs and many car men in here are glad that I said it, as they have managers and officers who will not give them the means or the facilities to repair the cars. And the sooner it goes up to the management, the better for us.

D. F. Crawford: My idea in making the motion was that we will be as far along with a good investigation of this subject as to put in our resolutions today, and that after January 1, 1915, something should happen. It would not benefit the immediate conditions more than to have a thorough knowledge of the condition when it is presented to the convention next year.

D. R. MacBain: The man with the modern equipment is getting 45 cents a day from the man maintaining the old little things; and it is not fair on the face of it, that the railroads who have spent the money should be penalized all the time. That is aside from any traffic or operating conditions.

(Mr. Crawford's motion was put and carried).

ABUSE OF THE REPAIR CARD.

The following is the discussion on this subject which was presented at the close of yesterday's session. (See *Railway Age Gazette* June 17, page 1416).

D. F. Crawford: Now, in the abuse of the repair card, it has been intimated that many of us are dishonest in making out bills. I wanted to see how dishonest we were. I therefore obtained for one year the number of car days the Pennsylvania Railroad pooled cars, all lines East and West of Pittsburg, were on foreign roads, and the number of days foreign cars were on our roads, and divided the car days into the amount of money we paid and received respectively. I found that for Pennsylvania cars on foreign roads, it was 5¾ cents a day; and in the case of foreign cars on the Pennsylvania roads, twelve cents a day. Gentlemen, I do not think we are dishonest.

My idea is that there undoubtedly have been improper bills for repairs, but in our worrying about the abuse of the repair card, I am afraid we are straining at a gnat and swallowing a camel. On one line, the General Superintendent of Motive Power, who kindly looked the information up for me, advised me that our cars on other lines cost us 2.6 cents a day, and other cars on our lines cast 15.8 cents a day. In other words, you can cut that bill in the middle and multiply the other by two and still have 50 per cent. discrepancy.

Now, if instead of spending so much time on the abuse of the repair card, and writing letters to each other and trying to find these minute amounts which are billed improperly, let us repair the cars. I took the annual report of the two roads in question for those figures, 2.6 and 15.8, and I found they cost the owner $58 per car per year; and I am advised that one-half the equipment is wooden underframe and one-half steel underframe; whereas the Pennsylvania Railroad is paying over $80 per year per car, with an equipment of nearly 40 per cent. of steel cars, and 40 per cent. of steel underframes, and less than 30 per cent. wooden cars.

Gentlemen, if we will repair our cars and keep them in service, we will not worry about the repair cards. As Mr. Brazier said: Start with a good car and keep the good car up. We are interested in 2,400,000 live cars, built to handle the traffic in this country. But I was interested yesterday in the amount of time we spent in discussing a few of those cars which died while away from home—in other words, the depreciation rate.

First I would say, build good cars—look at all the annual reports of all the railroads and compare the cost of all the railroads are spending to maintain their cars. It gives a very clear indication of what you are paying for. Our cars are on the lines of 20 roads, and the same twenty roads have cars on our line, and with the expectation of comparing cost of repairing cars, with the bills they make against us, as well as those that we make against them! and I think you will find a clear relation between the cost per mile in the annual report of each railroad against whom you make the bills.

R. E. Smith (A. C. L.): The debit balance against us for nine months of the present year was something like $235,000 on cars repaired. That is, bills we paid to foreign lines for repairs of cars exceeded the repairs, charges paid us by foreign lines for repairs of cars by $235.000. You will admit that was quite a serious situation, and when I was called upon to explain—and I could not explain it—and I cannot explain it today—but I made an honest effort to get some facts. I want to say that 50 per cent. of the cars that pass over our railroad for light, medium and heavier traffic, amount to 50 per cent. of all cars we repair, and I am not prepared to accept the insinuation Mr. Crawford made that we do not maintain our cars. That $58 may refer to the character of our equipment and the character of our service. I think it is a question that needs some light.

I found in my investigation, that our men were not thoroughly posted. I believe part of the explanation of the discrepancy is due to the fact that we have failed to put in all the bills we should have put in. But it does strike me as peculiar that we should be the only line that should make such replies. Many gentlemen said they were in the same fix—that the debit was against them. I am simply after light on this subject.

D. F. Crawford: The charge of dishonesty in the freight car repair bills was made in the convention of 1909; it was referred to by F. A. Delano in the report made to you yesterday. Mr. Smith's letter gave me an opportunity, and started me on an investigation which I wished to make. Mr. Smith's entire force is welcome on the entire Pennsylvania Line west of Pittsburgh, at any time.

Several gentlemen have stated that 50 per cent. of the cars repaired on their lines are foreign cars. I had a census taken and that showed that on our Southwestern System that a little more than 50 per cent. were foreign cars; but on our Northern System about 35 per cent., and on our Central System ,almost 50 per cent. On the Lake Shore, 50 per cent. were on foreign cars. Now, there are horse cars somewhere. So I took the figures of the Pennsylvania cars away, and all the roads of the Pennsylvania, and I was interested to find that we practically have Mr. Smith's figures, taking all of his cars away and all his cars home. Mr. Smith's figures, as I recollect, were 6 and 12 cents, but who got the 12 and who got the 6? My whole idea is to guard this situation, we must look for a larger thing than errors. I do not know but there are 10, 12 and 13 per cent., but I think they will not run much over 10.

I will take the cost line Mr. Smith referred to, and if we divide his by two and multiply ours by two, there would still be a discrepancy of 50 per cent. that would exist. You will find that by inspection of our accounts or methods. If anyone was in doubt as to car bills, we wish they would ascertain the car days at home and the car day abroad. The cost of cars per day, and then take it up with each other, as we all want to maintain the Mast Car Builder Rules of Interchange which have ben based on inherent honesty.

E. W. Pratt, (C. & N. W.): This method, it seems to me, is about as vague as to say how much coal. We try to to keep as many of our cars at home as we can, and as few on the road as possible; and we are repairing as few foreign cars as possible, compared with our own. We can see why your bill would be higher on the Pennsylvania Railroad and the B. & O., the Santa Fe or other high grade railroads. We

have divisions that have three or four times the draft values. Our percentage of doubt heading is almost nothing. When such cars as ours go over the Pennsylvania hills with heavy engines on them, why the defects of course develop.

F. F. Gaines: I found the situation was that a large number of our inspectors at interchange points were putting in as few interchange repair cards as possible, partly from weakness and partly from laziness. Although our bills against us are considerably greater than our bills against foreign roads, and we expect them to be, partly on account of the territory. Still we have made a decided increase by checking up our car inspectors and educating them; and at the same time laying down the law that we did not want anything that was not our own.

President Fuller: Did you notice any difference between "Since November 1st" and "Prior to November 1st"?

F. F. Gaines: Yes, sir, we did.

I. S. Downing (L. S. & M. S.): I want to raise a question in regard to different roads, in saying there is such a percentage of foreign cars as compared with their own cars. I think your own cars get much heavier repairs than the foreign cars. Taking them as a unit, your foreign cars go ahead.

CAPACITY MARKING OF FREIGHT CARS.

The committee sent out to the members a circular of inquiry to which 35 replies, representing 924 votes were received. A careful analysis of these replies is as follows:

Sixteen lines, representing 322 votes, reported owning or knowing of weak cars or cars that would prove structurally weak if loaded to full axle capacity. These cars are for the most part wooden cars in coal trade, which would not permit the maximum capacity stenciling. Fourteen lines, representing 349 votes, do not own or know of any cars that are structurally weak. Five roads did not vote directly on this question.

In answer to the question as to whether the railroad owns or operates any cars the body or trucks of which are strong enough under the present stenciled capacity, but which would not be strong enough under the proposed light-weight and maximum-weight stenciling, the majority of the roads voted in the affirmative. Out of the 924 votes, 662 report owning certain cars that are not strong enough and to which it would not be advisable to apply the maximum capacity plan of stenciling. While there does not seem to be any doubt, as a rule, regarding the structural strength of the modern car, and its ability to carry the increased load permitted by the maximum capacity plan of stenciling, 23 roads report certain types of structurally weak cars, such as flat, gondola, and wooden-underframe cars, which would develop higher stresses under the maximum loading than would be proper or permissible.

The third question was "Whether there can be any objection in applying the rule of light-weight and maximum-weight stenciling so far as it is applicable, consistent with strength of body or trucks which are not structurally weak, thereby restricting the stenciling of cars where the body or trucks may be structurally weak to the present light-weight nominal capacity.

Twenty-seven lines of the 35 who voted, or 75 per cent. of the total cars represented by the votes, are in favor of stenciling the maximum-weight capacity on cars whose strength will permit it. Two companies did not vote on this question, and the other 6 are opposed to it on the grounds of the confusion to shippers, etc. While the majority of the votes cast are in favor of limiting the proposed stenciling to cars that are strong enough, the question has naturally arisen as to what cars are strong enough, and how this strength should be calculated—that is, by the individual car owner or by a standard adopted by the association.

The fourth question was "Whether or not it would be more advisable to apply the rule of light-weight and maximum-weight stenciling to steel and steel-underframe cars exclusively, and moreover to such cars of this class as have a factor of safety sufficient to carry the maximum load; also, in the opinion of the members, what the minimum factor of safety should be for maximum loading stenciling."

In line with the limited views expressed as to factors of safety, the committee felt that the light-weight and maximum-load stenciling should be confined to cars of steel or having steel-underframes that have a factor of safety of 3 or better in the body structure, when figured for the maximum load, and with respect to trucks under such cars, the rule should be applied to all trucks having arch bars of M. C. B. dimensions or better, and to all trucks having cast-steel side frames, and to the various forms of special trucks such as pedestal type trucks of the box and other varieties, where the strength of factor of safety is equal to or greater than the equivalent M. C. B. arch bar.

On new cars the committee feels that the rule should be applied in its entirety, owing to the fact that practically all new cars are steel or steel-underframe construction, and will in all probability be built to meet the proposed requirements of 24-in. minimum cross-sectional area of center sills recently proposed by the committee on car construction to take care of buffing shocks, which imposes a construction which we feel will result in a high factor of safety on underframes from a load standpoint. With relation to trucks under new cars, the rule should be applied only when such trucks meet M. C. B. requirements or better as to arch-bar construction, or have steel side frames, or have pedestal type trucks where the factor of safety is equal to or greater than the equivalent M. C. B. arch bar.

The committee endorse the recommendation of a member that the subject of stenciling the light-weight and maximum load be referred to the American Railway Association in order to ascertain whether there are operating or traffic conditions with which the proposed method of stenciling would interfere.

The report is signed by: C. E. Fuller, (U. P.), chairman; M. K. Barnum, A. W. Gibbs, (Penna.); F. H. Clark, (B. & O.), and D. R. MacBain, (L. S. & M. S.).

DISCUSSION.

D. R. MacBain (L. S. & M. S.): As a member of the Committee on the Marking of freight cars, we want to call attention to trouble in billing freight loaded in private line cars, due to the fact that the private line companies do not follow the M. C. B. practice of stenciling the right weight on the car. As a result, the loading in refrigerating cars is in a sense estimated and corrected by weighing the car after it is unloaded; but then the ice is included.

Another point is that these companies do not all follow the I. C. C. order to publish the necessary detailed data regarding their cars in the Railway Equipment Register, which publication has been designated for the purpose. The minimum car load rating is based on the inside length of cars, and without such data available in this publication, it is hard to properly bill out. Auditors want to know if the association can require all car owners to stencil light weight on cars and also recognize the order of the Commission in publishing data in the Register.

M. K. Barnum (Ill. Cent.): I move that this subject be referred to Special Letter Ballot to ascertain the views of all the members of the association, and then referred to the American Railway Association for their information and further instruction. (The motion was carried.

LETTERING CARS.

At the meeting of the executive committee in the office of the secretary, August 13 and 14, 1912, the present committee on lettering of cars was continued another year, and to this committee was referred a copy of the proceedings of the American Association of Railroad Superintendents' meeting, held September 9, 1910, in which the subject of car lettering was considered. Subsequent to this, correspondence was carried on between D. F. Crawford and J. A. Sommerville, then president of the American Association of Railroad Superintendents, at Kansas City, regarding the lettering of cars. This correspondence resulted in the appointment of Charles Burlingame, superintendent of the Wiggins Ferry Company, St Louis, Mo., to represent the members of the Association of Superintendents and meet the committee of this association and consider the matter further. After some subsequent correspondence between Mr. Crawford and Mr. Burlingame, a subcommittee was appointed to investigate the matter and to meet with the Superintendents' Association of St. Louis and ascertain just what further changes and additions were desired. Mr. Burlingame appointed M. Marea, general superintendent of the St. Louis, Troy & Eastern R. R., to represent the Superintendents' Association, while the following subcommittee was appointed to represent this association: W. L. Wilt, Penna. Lines, chairman; C. B. Young, C. B. & Q.; O. C. Cromwell, B. & O.; and Ray M. Brown, New York Central Lines.

The subcommittee met with the Superintendents' Association of St. Louis in February last, with the view of ascertaining what their wishes were, and found that all they request was that seperate letters be placed on each side of the car, near the door hasp, for seal record purposes, so that such records could be taken by letters instead of using the words north and south or east and west with reference to sides of cars, as at present.

They claimed that on account of cars going across the ferry at St. Louis and the switching in congested districts, they are turned on Y's destroying their seal records. This they feel is necessary on account of the large amount of pilfering going on in the St. Louis district. These letters were to be placed on the cars with respect to the A and B ends, using the letters R and L, or any other letters, to signify the side.

The subcommittee does not recommend the application of the additional lettering, but on account of the fact that this marking is entirely for the benefit of the operating department, it is suggested that a special letter ballot be taken to ascertain the views of all members of the association.

The report is signed by: D. F. Crawford, (Penna. Lines), chairman; F. H. Clark, (B. & O.); F. A. Torrey, (C. B. & Q.); and D. R. MacBain, (L. S. & M. S.).

DISCUSSION.

D. R. MacBain: I move the recommendation of the committee be acted upon. and that the question be submitted to letter ballot. (The motion was carried.)

D. F. Crawford, (Penna.): In connection with the report of the Committee on Standards, yesterday, the question of the Car Body Marking, there is this to be said: The standard of the Association requiring specified lettering, is as follows:

"That for other car body markings on sides and ends, such as capacity, couplers, brake-beams, class of car, date built, outside and inside dimensions and markings inside of car, two or three-inch letters and figures be used with the following exceptions," then he presents certain exceptions.

Now I would like to offer to the Association a recommendation that we be permitted to use on cars having steel outside frames, badge plates with smaller letters, in regard to figures relating to coupler, brake-beams, class of car, date built, outside and inside dimensions and markings inside of the car, with one in. letters; and it makes a much better appearing car than the standard requirement. And have it run over the vertical oblique outside structure. I would like to move that that subject be referred to the proper committee. (The motion was carried.)

RETIRING PRESIDENT'S BADGE PRESENTED TO PRESIDENT ALLEN.

The executive Committee of the Railway Supply Manufacturers' Association yesterday presented the retiring president's badge to Samuel G. Allen. The presentation remarks were made by E. H. Walker, who said:

"Mr. Samuel G. Allen, you have been president of the Railway Supply Manufacturers' Association for the past year. This organization, composed as it is, of many men of many minds, of interest that at times clash, of corporations rich in established business and of those rich only in hope, of concerns with their thousands of men and of individuals for the first time submitting to a hoped for market a new device, requires for its chief executive a man skilled in diplomacy, full of tact, strong in emergency, unqualifiedly fair, calm in judgment, unswayed by clamor, with infinite patience and with that rare quality that inspires confidence in his leadership.

"These be strong specifications, but you have qualified in every essential, and the Association is to be especially congratulated that its affairs have had your able, earnest and effective guidance during this year.

"We have had many exhibitions in connection with these conventions, but for conception in design, completeness in detail and smoothness of operation this exhibition has eclipsed them all. It is written that by your works men shall know you. By your work, this year the members of this association know you better, and the better we know you, the greater is our admiration and the deeper is our regard for you.

"The payment for the faithful performance of public duty is the commendation of the public, and so this association, through its Executive Committee, with its grateful appreciation of your services, presents to you this past president's badge, that all men may know that you have been faithful to trust, efficient in office and that the highest honor at the disposal of this association has been conferred upon you."

THE "CRECO" BABY.

The magnitude of the exhibits that have appeared at Atlantic City for so many years have naturally developed interests peculiar to them. In connection with the erection of the booths and their care, many things have happened, and perhaps one of the most amusing is the story of the "Creco Baby."

In 1906, the first year the M. C. B. and M. M. conventions went to Atlantic City, Mr. Timothy Stanley Higgs, colored, was first employed by the Chicago Railway Equipment Company in the installation of its exhibit. Stanley was afterwards uniformed, and so was the first uniformed attendant in connection with the convention exhibits. "Stanley" has since become very well known, if not famous, and has always displayed a remarkable devotion to "Creco" interests. In fact, he is faithful to such an extent that care is really necessary to prevent his destroying competitors. Overhearing a discussion about advertising one day Stanley suggested that an excellent and novel way to advertise the "Creco" brake beam would be for one of the beams to be

The Creco Baby.

dropped overboard from the steel pier, and for him to dive after it, Stanley explaining that his talents as a swimmer were such that they should be used to this advantage. In 1909, the Chicago Railway Equipment Company had some special beams brass plated. These "gold" brake beams profoundly impressed Stanley, and he labored very ponderously over the problem of using them. One could hear his mental machinery creak and groan under the strain, and he finally evolved the idea of giving a so-called "Creco Cake Walk." He explained in detail how he would have four colored couples, the best dancers in Atlantic City, and that after going through the evolutions in the ball room, he, as a great climax to the cake walk, would suddenly clasp his hand to his brow, leave his lady and disappear. In a few moments he was to reappear, triumphantly carrying above his head one of the "gold" brake beams, after which the remaining cake walkers were to fall on their knees in worship of the same. This, Stanley suggested, would not only advertise the beam, but would be "suttinly powful fine and new."

In many ways Stanley has always proved that he thinks at all times very intensely and solemnly of "Creco" welfare, and when he recently named his first and only child "Creco

Leilia Higgs" he certainly manifested a beautiful loyalty, that has never been surpassed. We take pleasure in illustrating herewith a photograph of the "Creco Baby."

STEEL FRAME AUTOMOBILE CAR.

The Pennsylvania Railroad has recently adapted its new type of steel freight car frame to an automobile car and is now having several thousand built by the Pressed Steel Car Company. This car is shown in the illustration and has single sheathing, pressed steel underframe, body frame and roof, while the side and end doors are of steel plates. The center sills of pressed steel are of the fish-belly type, 20 in. deep at the center, and 11 in. deep at the bolsters and are reinforced at the bottom with a 4 in. x 4 in. x $\frac{9}{16}$ in. angle extending between the rear draft lugs and on the top with a 24 in. x $\frac{3}{8}$ in. cover plate running the full length of the car. The side sills are 6 in. channels extending between bolsters and 6 in. x 4 in. x $\frac{3}{8}$ in. angles from the bolsters to the end sills.

There are two crossbearers, each composed of four pressed steel diaphragms and one cast steel center sill brace securely riveted to the center and side sills and connected by top and bottom cover plates. In addition to the crossbearers there are six diaphragms on each side connecting the center and side sills of the door. Switchmen for local crews should be prohibited and six pressed steel braces between the center sills. The body bolster consists of two pressed steel "U" shaped members extending from the center sills to the side sills, with a cast steel combined center brace and rear draft lug between the center sills. The end sills are pressed steel, connected to the side sills by malleable iron push pocket castings and reinforced at the coupler opening with cast steel combined striking plates and front draft lugs. The corners of the car are further braced by pressed steel diagonal braces, extending from the body bolster and center sills to the side and end sills.

The side and end plates are composed of 6 in. x 4 in. x $\frac{3}{8}$ in. angles, the side and end posts and braces of pressed steel and the side door posts of bulb angles. The sides are tied together at the top by ten pressed steel carlines, to which the roof sheets are riveted. The roof sheets, in addition to being welded together, are reinforced at the splices by inside and outside butt strips.

These cars have one solid end, and one door end for use in the shipping of automobiles. The end doors are made of steel, are hinged to the corner posts and the opening extends from the floor to the roof. The side and end sheathing is 1¼ in. thick and is bolted to the posts and braces. The floor boards are 2⅜ in. thick. The side doors are wide and are made of steel in two parts, one sliding towards each end of the car. The side steps, ladders, grab-irons, etc., are in accordance with the United States Safety Appliance standards.

The trucks are of the Pennsylvania Railroad standard arch bar type with 5½ in. x 10 in. journals. The cars are of 100,000 lbs. capacity and have the following general dimensions:

Length inside	40 ft. 5 in.
Width inside	8 ft. 10 in.
Height inside	9 ft. 1 in.
Height at eaves	12 ft. 10 in.
Width at eaves	9 ft. 2 in.
Length overall	42 ft. 6 in.
Width overall (at door tracks)	9 ft. 11 in.
Height, rail to top of running board	13 ft. 4⅝ in.
Height, rail to top of brake mast	14 ft. 1⅝ in.
Height, rail to top of floor	3 ft. 7½ in.
Height of side door openings	8 ft. 5 in.
Width of side door openings	12 ft. 0 in.
Height of end door openings	9 ft. 0 in.
Width of end door openings	8 ft. 6 in.
Weight of car body	32,500 lbs.
Weight of trucks	16,600 lbs.
Total weight	49,100 lbs.

CIVIL SERVICE EXAMINATIONS FOR ENGINEERS FOR RAILWAY VALUATION.

Secretary McGinty, of the Interstate Commerce Commission, received yesterday circulars of the United States Civil Service Commission announcing open competitive examinations for a number of important positions for mechanical, civil and electrical engineers of railway experience for service with the Interstate Commerce Commission, mainly in connection with its work of making a physical valuation of the railways, from the register of eligibles. resulting from these examinations. Certification will be made to fill vacancies as they may occur in the several positions in the commission, under the act providing for the valuation of the property of common carriers, and vacancies as they may occur in other branches of the service in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

The positions for which the examinations are announced include senior mechanical engineer, mechanical engineer, senior inspector of car equipment, inspector of car equipment, senior inspector of motive power, inspector of motive power, senior structural engineer, structural engineer, senior civil engineer, civil engineer, senior electrical engineer, electrical engineer, senior railway signal engineer, railway signal engineer, senior architect and architect For the senior positions applicants will not be required to appear at any place for examination, but will

Pennsylvania Class X-24 Steel Frame Automobile Car.

be rated upon the evidence adduced as to their general and technical education and training, and their practical experience and fitness.

As a result of the examination for senior mechanical engineer two grades of eligibles will be established, the salaries in the first grade ranging from $3,000 to $4,800 per annum, and in the second grade from $1,800 to $2,700, and expenses. It is desired to secure eligibles having a thorough technical training and several years' practical experience in connection with the design, construction, operation, and maintenance of railway machinery, motive power, and equipment, and having a thorough acquaintance with the methods of appraisal and cost-estimating of railway machinery and equipment.

Applicants for positions under grade 1 must show that they are graduates in mechanical engineering from a reputable technical school and that they have had at least five years' actual responsible practical experience in mechanical engineering work subsequent to graduation; or, if not graduates, that they have had not less than ten years' actual responsible practical experience in the above line of work. Applicants for grade 2 must have had three years' such experience subsequent to graduation; or, if not graduates, not less than eight years' such experience. For grade 1 applicants must be between 30 and 60 years of age and for grade 2 between 25 and 50.

For the position of mechanical engineer the salaries range from $1,080 to $1,500. Three years' practical experience in mechanical engineering will be required for admission to this examination. Graduation in mechanical engineering from a technical school of recognized standing will be accepted in lieu of two years of these three. Applicants must have reached their twenty-third year, but not their fortieth birthday, on the date of the examination.

For senior inspectors of car equipment the salaries range from $1,800 to $3,600. It is desired to secure eligibles having several years' practical experience in car construction or repair shops and in cost-estimating of car construction and repairs. Applicants must show that they have had at least five years' experience as master mechanic, master car builder, general car foreman, or in similar service, and that they have within two years next preceding the date of their application been in active service in such capacity.

For inspectors of car equipment the salaries range from $1,200 to $1,500. Three years' experience in the employ of a railway in the department of equipment or with a company manufacturing railway car equipment is required for admission to this examination. Graduation in mechanical engineering from a technical school of recognized standing will be accepted in lieu of two years of these three.

For senior inspector of motive power the salaries range from $1,800 to $3,600. It is desired to secure eligibles having several years' practical experience in locomotive construction and repair shops, in locomotive operation, and in cost estimating of locomotive construction and repairs. Applicants must show that they have had at least five years' experience as master mechanic, road foreman of engines, roundhouse foreman, locomotive shop foreman or engineman, and that they have, within two years next preceding the date of their application, been in active service in any such capacity or in the capacity of inspector of locomotive equipment under the government of the United States.

For inspector of motive power the salaries are from $1,200 to $1,500. Not less than three years' experience in the motive power department of a railroad or with locomotive works is required for admission to this examination. Graduation in mechanical engineering from a technical school of recognized standing will be accepted in lieu of two years of these three.

Appointments to the positions named will be principally for duty in the field, but some appointments will be made for duty in Washington.

Persons who desire to take the examinations should apply for Form 2039 to the United States Civil Service Commission, Washington, D. C., or to one of several other officers named in the circulars, before July 21.

Conventionalities.

You bet it was hot!

Those who were regretting last week that they did not bring their overcoats were regretting yesterday that they brought any coats at all.

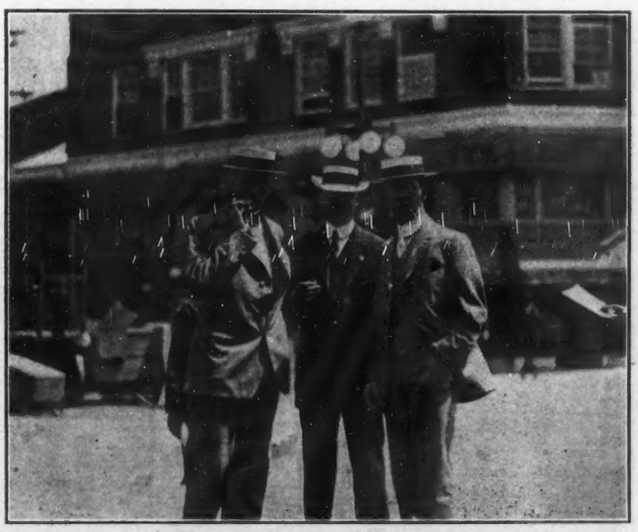
The Enrollment Committee, headed by Chairman Yardley,

J. T. Carroll, Assistant General Superintendent Motive Power, B. & O., Little Miss Carroll and her aunt, Miss McGuinn.

certainly made a fine showing yesterday noon as it marched along the boardwalk in military formation.

It you didn't know that yesterday was Bunker Hill day, it was because Frank Barbey missed handing you a reminder in the form of a small American flag.

T. S. Lloyd, formerly superintendent of motive power of the Delaware, Lackawanna & Western, is reported to be making his



Left to Right: C. A. Brant, Mechanical Engineer, C. C. C. & St. L.; M. H. Haig, Mechanical Engineer, A. T. & S. F.; A. R Ayers, Mechanical Engineer, N. Y. C. Lines West.

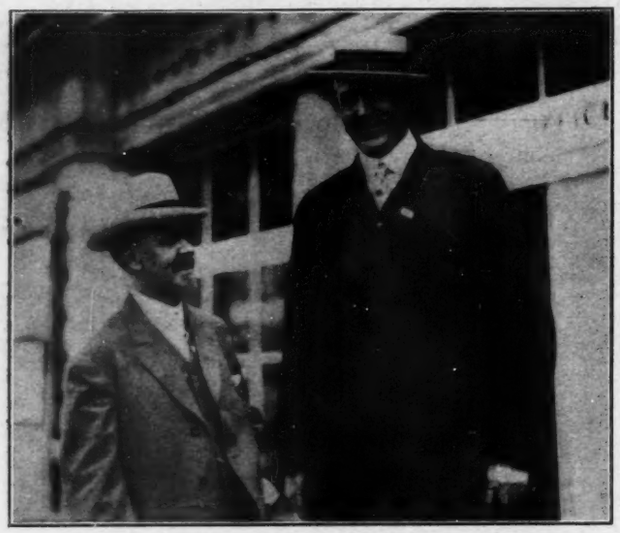
home at Richmond, Va. He is not attending the conventions this year.

R. D. Smith, superintendent of motive power of the Boston & Albany, came on the pier early yesterday morning with a small

flag in his buttonhole and reminded us of the fact that Boston was having a holiday in celebrating "Bunker Hill" day.

William St. John, of the Safety Car Heating & Lighting Company, is following his old time custom of celebrating his birth at these conventions. He is just 73 years old today; but he looks not one day older than he did ten years ago.

For the third time in their short lives the four-year-old twins of A. E. Ostrander, of the American Car & Foundry Company, are attending the convention. Mr. Ostrander brought his family down Saturday and expects to remain in Atlantic City through the week.



H. Hammett and Bill Steel, the Short and the Long of the Convention.

Charles W. Waughop, for many years chief joint interchange inspector at St. Louis and East St. Louis, died within the past year and is missed from the conventions this year by his wide circle of friends. He had attended the M. C. B. conventions for 20 years or more.

W. L. Robinson, Superintendent of Fuel Consumption, Baltimore & Ohio

C. T. Rommel, special inspector in the motive power department of the Baltimore & Ohio, spent a couple of days at the conventions last week. Among other things in which he has been specially interested during the year has been an extensive series of safety valve tests.

Wm. Elmer, superintendent of motor power of the Pennsylvania at Buffalo, who is attending the M. C. B. convention, was elected first vice-president of the Central

H. E. Blackburn, Apprentice Instructor, Erie Railroad, Dunmore, Pa.

Railway Club at its last annual meeting. H. C. Manchester of the Lackawanna is the second vice-president.

W. M. O'Brien, master mechanic Kanawa & Michigan, is attending his first convention and has Mrs. O'Brien with him. He has been with the road he is representing for 27 years and received his promotion to his present position within the past year.

Left to right—J. E. Keegan, S. M. P., G. R. & I.; John Connolly, S. M. P., D. S. S. & A.

They are using power on his division which is handling upwards of 100 cars per train.

George T. Wilson, formerly purchasing agent of the Delaware, Lackawanna & Western, and who retired because of ill health, is now stopping at the Water Gap House, Water Gap, Pa. C. L. Bundy, general foreman of the car department of the Lackawanna at Kingsland, N. J., who is attending the conventions, saw him last Sunday and says he is in fine shape.

Warren J. Lynch, third vice-president of the American Steel Foundries, is another supply man at the convention

who was formerly in the railroad service, but his railway work has been in a different department from most of those who desert the transportation business for that of making and selling supplies. Most of his experience has been in the line of selling tickets and he was for several years passenger traffic manager of the New York Central Lines West.

E. C. Hall, general manager of the East Broad Top Railroad & Coal Company, was in Atlantic City on Sunday and looked over the exhibits on the pier with his master mechanic, J. F. Prendergast. The new narrow gage Mikados which were recently put in service are hauling 650 tons over a 2.6 per cent. grade and each one of them is replacing two of the older locomotives.

Samuel Lynn, master car builder of the Pittsburg & Lake Erie, stopped in at the editorial offices yesterday morning and threatened to bring suit against us for libel. In speaking in the *Daily* of June 17, of the number of steel cars which were given heavy repairs at McKee's Rocks, we said that they were being turned out at the rate of four per month. This should have been four per day.

C. H. Carman, who was recently promoted from the position of general foreman of the Missouri Pacific at Kansas City to general foreman in charge of the Sedalia, Mo.,

C. E. Chambers, Superintendent of Motive Power, C. of N. J. with F. D. Waller, Flower Resilient Packing Co., at his Right.

shops, is attending the conventions for the first time since 1907 and 1908 when he came as supervisor of air brakes of the C. & E. I. He went to the Missouri Pacific when the Kansas City shops were first opened.

H. Osborne, of the Canadian Pacific, came down to attend the M. C. B. convention. Within the past year he has been promoted to the position of assistant superintendent of motive power, Eastern Lines, and was succeeded as shop superintendent by G. I. Evans. Mr. Osborne still makes his headquarters at the Angus shops and finds it possible to get out into the shop more or less frequently, thus keeping in touch with the work which he has been interested in developing and extending for many years.

When M. J. McCarthy, superintendent of motive power of the Baltimore & Ohio Southwestern, left the Big Four, the employees presented him with a very fine automobile. Mr. McCarthy had to leave this with his family at Indianapolis while he was getting settled on the new job and when he finally moved the family to Cincinnati and had an opportunity to use the car he found that his 13-year-old son had become so proficient in driving it that he has not attempted to interfere and has not not yet learned to drive the car himself.

There was an enjoyable birthday party at the Traymore Saturday evening and although there were 40 candles burning on the cake, the "richin," A. R. Wilson, Detroit, declared to his friends present that the number of candles testified falsely the number of years he had lived. However, the evening was pleasantly passed by those present. Among his guests being Mr. and Mrs. P. P. Mirtz, Mr. and Mrs. W. D. Thompson, Mr. and Mrs. A. M. Rudel, Mr.

Left to right—J. Milliken, S. M. P., Philadelphia, Baltimore & Washington, and Alex. Kearney, Asst. S. M. P., Norfolk & Western.

and Mrs. Wing, D. Hawkesworth and Mr. and Mrs. Carter Blatchford.

George Gibbs, chief engineer of electric traction of the Long Island Railroad, is attending the conventions again, after having missed them last year. At the time of last year's conventions he was in Europe. Mr. Gibbs has seldom failed to be present at the meetings during the last quarter century. As is well known he was in charge of

Left to Right—J. F. De Voy, Assistant Superintendent of Motive Power, C. M. & St. P., and James E. Keegan, Superintendent of Motive Power, G. R. & I.

some of the most important work in connection with the construction of the Pennsylvania terminal in New York, and in recent years he has devoted most of his time to work more or less closely related to electrification being done by the Pennsylvania Railroad system.

MASTER CAR BUILDERS' REGISTRATION.

Alexander, J. R., General Road Foreman, Penna., Iroquois.
Beaghen, Thos., Master Car Builder, Union Tank Line, Shelburne.
Davis, M. J., Asst. Engr. M. P., Penna., Chalfonte.
Felton, Henry E., President, Union Tank Line, Shelburne.
Geisking, Charles, General Foreman, Penna., Seaside.
Gibbs, Geo., Chief Engineer, Penna. Tunnel & Terminal, Chelsea.
Gorrell, W. T., Master Car Builder, Philadelphia & Reading Ry., Monticello.
Kaderly, W. F., Supt. M. P., Ga. So. & Fla. Ry., Chalfonte.
Phipps, J. W., M. P. Inspt., B. & O., Ilesworth.
Porcher, S., Asst. to Pur. Agent, Penna.
Rhett, E. M., Electrical Engineer, Central of Georgia, Marlborough-Blenheim.
Sasser, E. C., M. M., Southern, Arlington.
Spence, A. N., Traveling Insp. Equip., So. Ry., Arlington.
Trapnell, F. W., Chief Interchange Inspt., All Lines, Chalfonte.
Yeager, Thos., M. M., Illinois Southern, Monticello.

MASTER MECHANICS' REGISTRATION.

Borcea, E., Pine Line, Roumanian Gvt., Strand.
Cross, C. W., Vice-President, N. Y. C., Dennis.
Kaderly, W. F., Supt. M. P., Ga. So. & Fla. Ry., Chalfonte.
Kapp, W. F., Supt. M. P., R. F. & P., Marlborough-Blenheim.
Moriarty, G. A., M. M., N. Y. N. H. & H. R., Dunlop.
Rhett, E. M., Electrical Engineer, Central of Georgia, Marlborough-Blenheim.
Sasser, E. C., M. M., Southern, Arlington.
Wieseckel, G. F., M. M., W. M. R. R., Continental.
Yeager, Thomas, M. M., Illinois Southern, Monticello.

M. C. B. GUESTS.

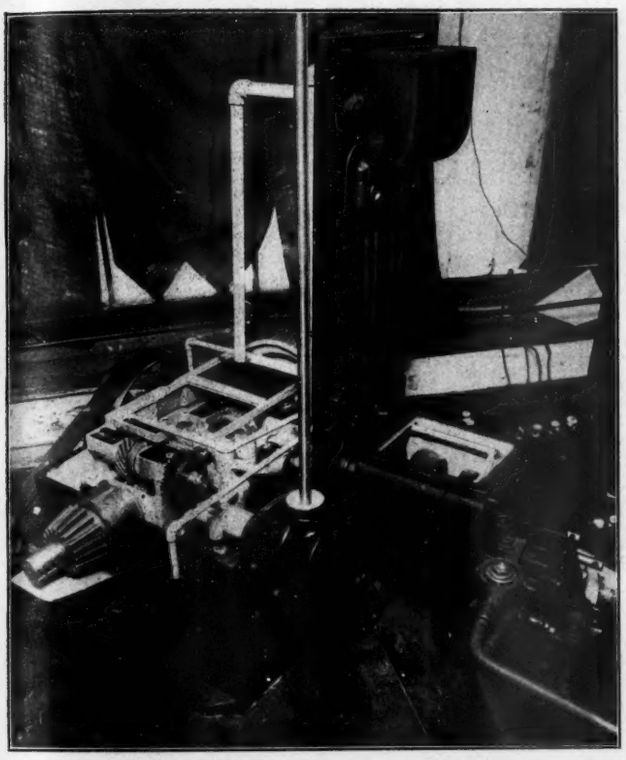
Badenhausen, Fred. Wm., Accountant, So. Pac. in Mexico., Marlborough-Blenheim.
Banan, P. H., Machinist, B. & O., Lyric.
Barnes, W. C., Asst. Con. Eng., So. Pacific.
Beyer, Ed. S., Purser Steamships, Ward Line, Chalfonte.
Bixler, H. C., Asst. Supt., Penna., Seaside.
Bolin, W. O., G. C. For., B. & O., Lexington.
Borcea, E., Inspt. of Service, Romanian Govt., Marlborough-Blenheim.
Brooks, N. S., Erecting Foreman, B. & O., Francis.
Burgoyne, C. J., Genl. Foreman, P. R. R., Elwood.
Burnham, W. D., Gen'l For. M. P. Dept., B. & O., Ariel.
Butts, G. W., Asst. M. M., P. R. R., Galen Hall.
Carman, C. H., Genl. Foreman, N. & P., Edison.
Carson, H. R., Secy. Mr. Baker, C. N. O. & T. P., Marlborough-Blenheim.
Cook, C. A., For. Painter, P. R. R.
Coulter, A. F., General Car Foreman, Union R. R., Channel.
Cruikshanks, E. F., J. C. P., The Virginian, Ohio Inn.
Davis, R. L., M. P. Insp., Penna.
Diven, J. B., Asst. Engr., Penna., Haddon Hall.
Dobson, J. D., Sec. to Gen. Supt. M. P., B. & O., Bouvier.
Earner, J. P., Asst. Gen'l Foreman, C. C. C. & St. L., Lexington.
Fitz, E. M., Elec. Engr., P. R. R., Seaside.
Fritsch, J. A., Shop For., Penna., Lexington.
Gee, N. E., Draftsman Mech. Eng. Office, P. R. R.
Gerber, W. F., Gen. St. K., Southern, Shelburne.
Gibboney, E. S., Car Foreman, H. & B. T. M., Greater Pittsburgh.
Gillis, A., Asst. For. M. P. Dept., B. & O., Wittle.
Glynn, D. M., M. M. Eng. Dept., N. Y. C., Haddon Hall.
Graham, J. P., Foreman Electric Dept., Penna., Warwick.
Grantier, L. V., M. P. Insp., B. & O. R. R., Carnix.
Green, C. H., Chief Inspt., Rock Island R. R., Traymore.
Hampton, K., Chief Joint Inspector, B. & O. R. R., Larchmont.
Haughey, J. B., Foreman, Penna., Riesley.
Hauser, Percy, Draftsman, Penna. R. R., Dunlop.
Hendry, J. A., Traymore.
Henthorn, J. T., Residence Inspector, B. & O. R. R., Brighton.
Hines, J. P., General Foreman, B. & O., Monticello.
Hinkens, E. H., General Foreman, B. & O., Marlborough-Blenheim.
Hukill, H. O., Pur. Agent, P. R. R. Lines West, Traymore.
Hukill, W. S., C. Mch. Draughtsman, Penna., Haddon Hall.
Isaacs, T. C., Asst. For., B. & O., Boyer.
Issaeff, Anatole, Mech. Engr., Marlborough-Blenheim.
Jay, Thos. C., Chief Clerk & Mech. Engr., D., L. & W. R. R., Dennis.
Kelley, J. P., Cons. Air Brake Eng., N. Y. C., Chalfonte.
Kelly, Walter T., Mech. Engr., Pere Marquette, Haddon Hall.
Koch, Geo. B., Asst. Gen'l Foreman, Penna., Traymore.
Krouse, E. G., General Foreman Car Dept., Penna.
Lang, Charles, Jr., Traymore.
Layman, A. R., Inspt. R. R. & Warehouse, Clarendon.
Leonard, W. W., Inspt. M. P. Dept., B. & O., Pacific
Line, E. L., Inspt. M. P. Dept., Penna.
Loosen, John R., Supt. Motor & Ref. Eq., Wells Fargo & Co. Express, Rudolf.
Maddox, Paul, Car Foreman, C. & O., Chalfonte.
Major, Thos., Foreman Penna. R. R., Shelburne.
McGuire, J. J., Gen. For., B. & O., Lexington.
McGyrt, C. W., Gen. Eng. House For., D., L. & W., Lexington.
McMonamin, C. G., Motive Power Insp., Penna. R. R., Strand.
Merster, C. L., Mech. Eng., Atlantic Coast Line, Dennis.
Merz, C. B., Chief Clerk, Chgo., Terre Haute & Southeastern, Schlitz.
Murphy, P. P., Examiner, Penna., Islesworth.
Norris, J. C., For. Car Shops, Cumberland Valley, Monticello.
Osborne, Harry O., M. M., C. R. I. & P., Haddon Hall.
Otis, Chas. H., Chief Clerk Ry. Mail Service, Chelsea.
Petersen, W., Shop Engr., Canadian Pacific, Haddon Hall.
Peiffer, C. A., M. P. Ins., Penna., Lexington.
Porter, C. D., Asst. M. M., Penna., Chalfonte.
Prentice, Wade H., M. C. B. Clerk, P. C. C. & St. L., Star Cottage, 6 S. Ohio Ave.
Price, James H., M. P. Clerk, P., B. & W., Morton.
Rafter, Edw. L., Insp. Phila. Terminal Div., Penna. R. R., Chalfonte.
Ramage, J. C., Supt. Tests, Southern, Chalfonte.
Ransbury, F. S., Air Brake Instructor, Penna., Iroquois.
Reece, Algernon, Haddon Hall.
Reilly, Thos. E., Special Agt., Penna., Chelsea.
Renner, C. W., Asst. Gen. Foreman, Penna., Chalfonte.
Rhine, Geo. B., Engine House Fireman, Penna., Biscayne.
Robins, J. B., Foreman Boiler Maker, C. R. R. of N. J., Eddystone.
Rose, C. H., Insp. Test Dept., P. R. R., Wheeling.
Rowland, W. I., Asst. Road Foreman of Engines, B. & O., Lexington.
Rusling, W. J., M. M., Penna., Chalfonte.
Russell, G. W., Gen. Equip. Insp., N. Y., P. & N. R. R., Raymond.
Russell, J. K., Retired Rd. Fore. Engines, P. R. R., Raymond.
Scheifele, John, Jr., Asst. Road Foreman of Engs., Phila. & Reading, Ariel.
Sensenbach, C. A., G. For., P. R. R., Milton.
Sharrow, G. C., Gen. Foreman & Car Inspt., Phila. & Reading, Riesley.
Simon, Lewis F., Purchasing Agents Office, Chelsea.
Sindall, G. E. M., M. C. B. Clerk Office Supt. M. B., Penna. R. R., Westminster.
Singleton, C. W., Foreman Car Shops, West Jersey & Seashore, Radner.
Skilling, J. K., Inspt. of Accts., B. & O., Sterling.
Spence, A. N., Traveling Equip. Inspt., Southern, Arlington.
Staley, P. C., G. F., Penna., Chalfonte.
Stanton, E., Chief Joint Car Inspt., N. & P. Belt Line, 171 Pacific Ave.
Steinbrunn, J. J., Foreman Machinist, Penna. R. R., New Ocean Hall.
Stewart, H. A., Shop Supt., Armour Car Lines, Marlborough-Blenheim.
Stoll, W. J., Inspector, Wabash, Pennhurst.
Suhrie, N. H., Traveling Engineer, Penna.
Swab, J. J., Asst. Road For. of Eng., Penna., Elberon.
Terhune, J. H., Foreman, P. R. R., Edison.
Tolin, J. J., Foreman Freight Car Repairs, Penna. R. R.
Toomey, T. H., Foreman Erecting Shop, Penna. R. R., Wittle.
Trace, A. A., Chief M. C. B. Insp., Erie R. R., Monticello.
Wallen, J. D., For. Car Repairs, Penna., Boston.
Warnig, F. M., Foreman Phy. Lab., Penna.
Waterfall, Arthur T., Traffic Commissioner, Marlborough-Blenheim.
White, J. W., M. Tinner, Penna., Lexington.
Wightman, D. A., Dennis.
Williams, David T., Mech. Engr., P. & R.
Wood, Henry, Vice-Pres., Midland R. R., Chalfonte.
Wright, Wm., Consult. Eng., Brighton.
Yarwood, John G., Foreman, L. T.

SPEED CHANGE MECHANISM OF BULLARD VERTICAL TURRET LATHE.

The maintenance of shop equipment has long been a serious item in railway, as well as in other shops, and while replacement and repair charges have been high and are constantly growing greater there is a side to the question which seldom receives consideration; that is the delay in work schedules and the increased cost of shifting the work from the machine which has fallen down under the stress of modern feeds and speeds.

An investigation of a series of breakdowns indicated that there were two principle causes for the delay and expense. The first in importance was the failure of gears, which indicated that the material was at fault. The second most frequent explanation of a tie-up was that sufficient oil had not been supplied to the bearings, either through the carelessness of the operator or because the oil-way had become clogged and oil could not reach the bearing.

After a long series of experiments the Bullard Machine



Lubrication of Speed Change Mechanism Used on Bullard Vertical Turret Lathe.

Tool Company adopted for its gearing material a crucible chrome nickle steel which, with proper heat treatment, shows a physical test of 270,000 lbs. tensile, 245,000 lbs. elastic limit, 11.5 per cent. elongation and 40 per cent. contraction together with an exceptional wearing surface of 70 scleroscope test. A sample of this material, bent double while cold, is exhibited at its space and shows absolutely no fracture or break or apparent strain in the outside surface of the bend.

As an illustration of the continuous flow system of lubrication adopted by it after the investigation referred to above it also has on exhibit a testing stand which shows the copious supply of oil which literally floods the bearing and gears in the vertical turret lathe.

From the return sump in the base of the machine the oil is pumped to the filtering and distributing reservoir and from there flows by gravity through the various leads to the bearings and gear boxes. Seven quarts of clean oil per minute is passed through the machine and as the volume is so great there can be no destruction by distillation, the bearings having no opportunity to become even warm under the heaviest service.

Some two hundred and fifty machines of this type are in operation throughout the country and in not a single case has there been any expense for maintenance of gears or bearings.

FASTNUT WASHERS AND AUTOMATIC WRENCHES.

One of the most popular exhibits this year is that of the Fastnut, Ltd., London, England, represented by Walter H. Cook. Mr. Cook came to the United States to obtain patents on his automatic wrenches and is taking advantage of the convention to demonstrate their utility. He is exhibiting a "Fastnut" washer, a "Fastfit" wrench and a "Fastnut" spanner.

The "Fastnut" washer in use on over 40 foreign railroads will hold nuts under any vibration, the action being as follows: Drop the washer on the bolt in place of the ordinary washer and screw down the nut. The action of screwing down the nut flattens the teeth and automatically fixes the washer to the bolt, the springs engaging with the sides of the nut and holding it.

The "Fastfit" wrench is operated with a fixed and sliding jaw with teeth. The action of closing the sliding jaw fixes the wrench tight to the nut, allows it to hold automatically and ratchets on it. This wrench takes from 3/8 in. nut up to 7/8 in., automatically adjusting itself.

The "Fastnut" spanner is similar in appearance to the ordinary engineer's drop forge spanner, except that it has a movable head at each end. It is operated with a spring which is guaranteed to wear for two years. This spanner takes four different size nuts at each end.

ELECTRIC TRUCKS.

Self propelled trucks are proving most valuable in some cases, in railroad shops and passenger car yards, as well as in freight terminals and passenger stations. As is shown in the illustration, these trucks are capable of handling very heavy loads and are practically unlimited in their radius of action. They will transport heavy castings to various parts of a building or shop where crane service would not be possible, as well

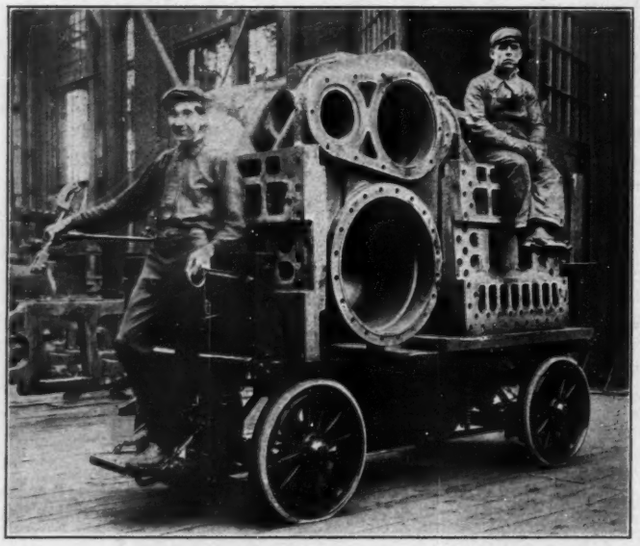
Electric Truck in a Passenger Car Yard.

as between different shops. In the latter case they have a decided advantage over industrial tracks in view of the fact that they can receive or deliver material at practically any desired point.

Trucks of this kind, as manufactured by the Elwell-Parker Electric Company, Cleveland, Ohio, are on exhibition. On several designs the steering apparatus is arranged to operate all four of the wheels, which permits the truck to turn very sharp corners and to work its way in between machines where a

hand operated truck could not be used. Several designs with very low bodies which permit the convenient manual loading of heavy material are shown, as well as those with an elevated platform, suitable for smaller parts or for use in connection with a crane for cylinders and similar large parts.

The source of power is a compact type of storage battery located in a convenient position where it will not interfere with the operation or loading of the truck and also where it can be easily removed if necessary. This drives a small series-wound water and dust proof motor which is geared to a countershaft. The countershaft in turn is geared through universal pinions to the driving wheels. Both of these sets of gearing are arranged to give a reduction in speed so that the motor will operate at an economical speed while driving the truck at a slow rate. The operator stands on a platform at the front of the vehicle and controls its direction by a horizontal steering lever and its speed by a controller lever on the opposite side. The controller allows three speeds forward or reverse and there is an automatic switch combined with both the controller and the operator's platform which will open the main switch and return the controller to the "off position" whenever the operator steps from the platform. At the same time, twin brakes enclosed in the countershaft column will automatically



Self Propelled Truck in a Railroad Shop.

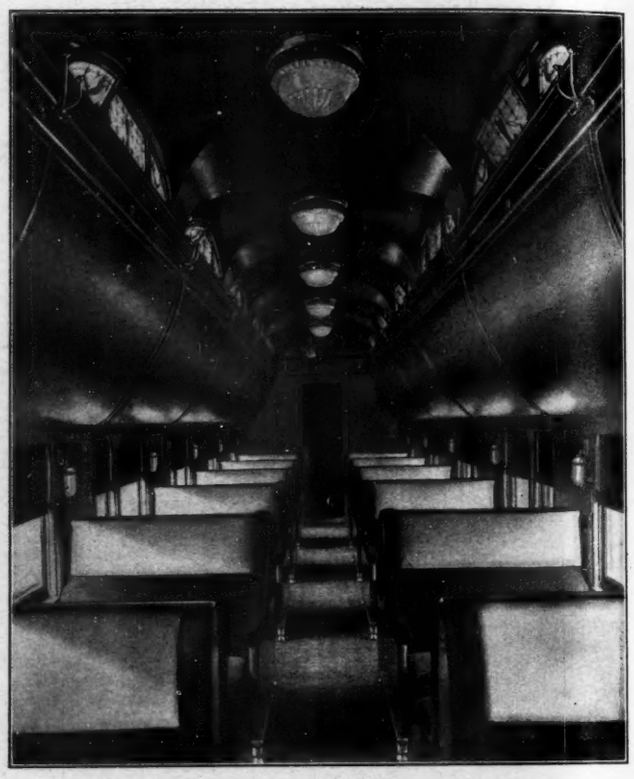
stop the truck. These come in action whenever the operator's platform is allowed to lift by the operator stepping or being thrown from it.

These trucks of various designs have a weight from 1750 lbs. to 3150 lbs. depending on the size of the truck and the type of storage battery employed. They operate at a speed of from 5 miles to 6 miles per hour when loaded and from 7 miles to 8 miles per hour when empty. In most cases a capacity of 4,000 lbs. is provided.

PINTSCH GAS LIGHT WITH ELECTRIC IGNITION.

Occupants of sleeping car staterooms which are lighted by gas are apt to complain of the necessity of calling the porter to turn on and extinguish the lights in the compartment, and this objection has been cited against the use of gas lamps in staterooms. The electric light has overcome this objection, but on transcontinental trains, where a long stretch of open country prevents adequate maintenance of equipment, electric light has disadvantages that may outweigh the advantage of convenience in lighting.

The Canadian Pacific has equipped several of its transcontinental trains with an improved type of Pintsch mantle lamp that gives the occupant of the stateroom full control of the lamps in the room without any necessity of calling the porter. In these lamps ignition is obtained by an electric spark, and a combination gas cock and electric switch is located in each stateroom so that to light the lamp it is only necessary to turn the handle of the switch. The lamps in the body of the car are also Pintsch mantle lamps, and are operated by an electric spark. The porter does not have to go through the car with a torch or taper and light each lamp individually, but lights all the lamps from a conveniently located point by simply turning on the gas at



Canadian Pacific Sleeping Car Equipped with Pintsch Gas Light and Electrical Ignition.

the main cock and pushing the buttons, which are similar to those used on electric lamps. Electric berth lamps are employed in these sleeping cars and are operated from 1 k. w. Safety generator. This system has been developed by the Safety Car Heating & Lighting Company, New York.

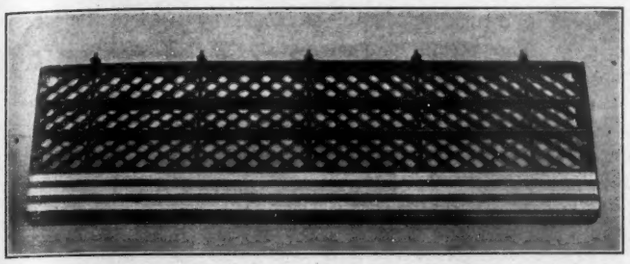
WATER COOLER FOR POSTAL CARS.

Among the fittings in the steel postal car which is being exhibited on Mississippi Avenue by the American Car & Foundry Company, is a galvanized iron water cooler having separate compartments for ice and water, and a drain for each compartment. The water compartment can be easily removed from the ice compartment by unscrewing the faucet and drain cock, and the ice compartment is provided with an overflow, having the opening located about one-third of the way below the top, so that the water from the melting ice is retained to assist in cooling the drinking water. If it is desired to drain off the water from the melted ice, it can be accomplished by opening the valve in the bottom of the ice compartment. Both the inner and outer walls of the latter are thoroughly insulated with granulated cork.

This cooler is made in two sizes, one for full postal cars, having a capacity of 8.9 gal., and the other for compartment cars, having 4.45 gal. capacity. It is manufactured by the American Car & Foundry Company, New York, and meets the requirements of the postoffice department.

SAFETY DEVICES.

A new non-slipping safety car step is being made by the American Mason Safety Tread Company, Boston, Mass., which embodies features of the Stanwood step and the Mason safety tread. The step hangers and toe guards are of pressed steel, while the tread proper is made up as shown in the illustration. The front portion consists of a 3 in. strip of Mason safety tread and the rear portion of ⅞ in. x 19 in. gage high carbon Stanwood crimp steel. This makes a stiff and rigid step, and while essentially a safety tread



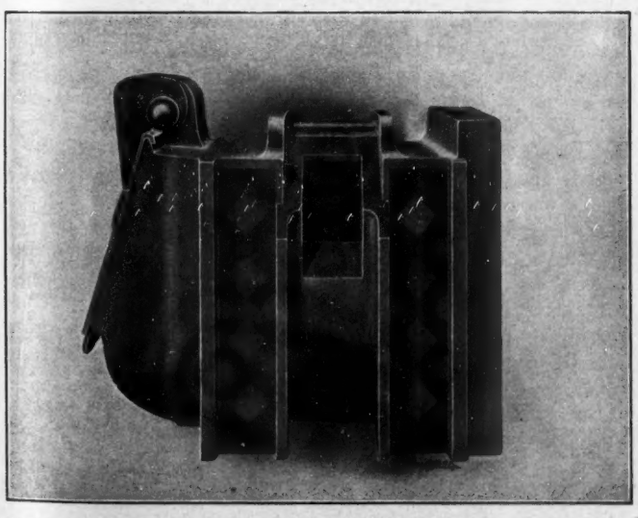
Combination Stanwood Step and Mason Safety Tread.

it also has the advantages of a foot scraper, thus keeping the dirt from being carried into the cars.

Another safety device made by this company is the Mason non-slipping safety ladder shoe. These shoes are applied to the bottom of the ladder rails, and the base, which comes in contact with the floor, consists of a carborundum surface of a hard, gritty nature. The method of attaching permits the base of the shoe to lie flat on the floor, no matter at what angle the ladder is placed. These shoes are furnished in either cast iron or aluminum.

PEDESTAL JOURNAL BOX WITH STEEL INSERTS.

After two years service, McCord & Company, Chicago, state that their pedestal type journal box fitted with continuous steel inserts in the pedestal wearing faces, has proved to have great durability and wear-resisting qualities. The steel



McCord Journal Box with Steel Inserts in the Pedestal Face.

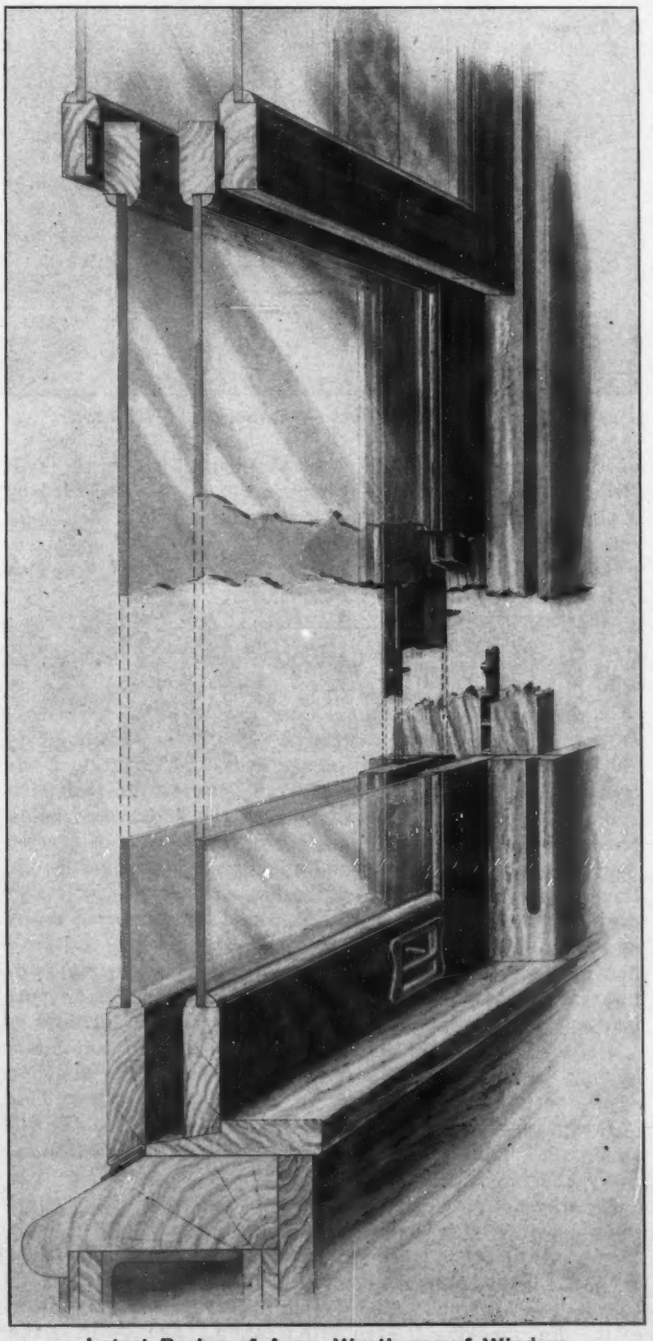
inserts are so constructed and set in place that it is claimed there is no danger of their becoming loose. This box also possesses the advantages of malleable iron over grey iron and insures an accurate fit in the pedestal. It is arranged for use with the McCord journal box lid if desired.

PRESSED STEEL FREIGHT CAR END.

The W. T. Van Dorn Company, Chicago, Ill., is exhibiting a two-piece pressed steel freight car end at the track exhibit. These new ends have the concentric corrugations similar to the single-end type except they are not made in the form of a circle. The two sheets are riveted together along the horizontal center line of the end of the car. Designs are also shown for corrugated end doors for automobile cars. Both designs have the strengthening features of the concentric corrugated sheets.

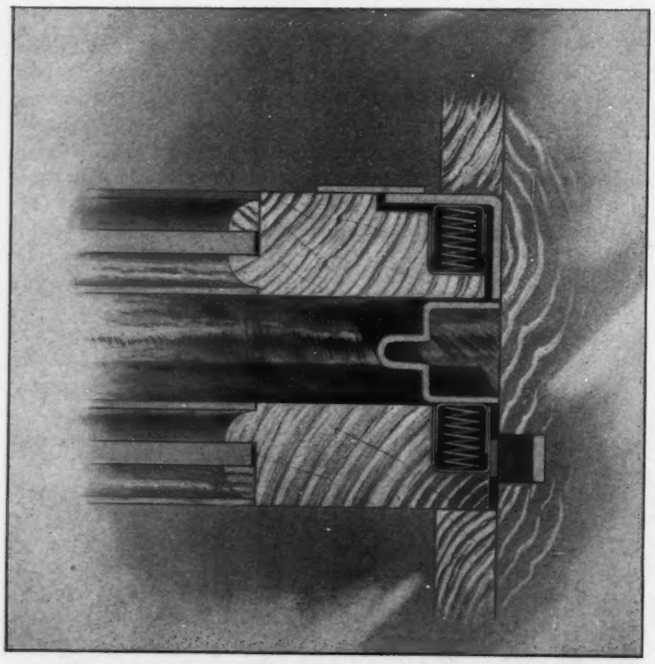
WEATHER-PROOF WINDOW.

During the past few years a great deal of attention has been given by various manufactures to the development of a weather- and dust-proof car window. The Acme Supply Company, Chicago, which has previously placed several designs of windows



Latest Design of Acme Weatherproof Window.

on the market, has just introduced a type in which the post battens of the window frame form a lip which extends into the rabbeted space in the sash stile. Facing springs are applied to the sash, forcing the window away from the lip, which draws the brass sash strips to a tight joint against the post battens. This joint is set away from the corner so that it is claimed the wind cannot force its way in, but the wind pressure assists the action



Facing Springs for Acme Weather-proof Window.

of the facing springs to tighten the joint between the sash strip and the batten lip. The top of the window is sealed by a plush strip and the bottom by a weather strip of double-lip rubber, held by a brass holder. This gives double weather-proofing at the bottom and also tends to stiffen the sash and prevent its bending in the center.

BOX CAR DOORS.

In the exhibit of the Camel Company of Chicago are several new designs of box car doors. One is for ordinary cars and has a hanger arranged for use with a combination Z-bar track at the top. As the rollers run between the two horizontal flanges there is no sticking of the door when being opened or closed and the track also provides a weather shed over the top of the door and the upper horizontal flange provides a weather shed over the hanger. This door is also equipped with interlocking weather and burglar-proof strips and has a deep flanged bottom Z-bar.

A door which gives a 10 ft. opening, intended for automobile cars is also on exhibition. This is double, one part being 4 ft. in width and the other 6 ft. The 4 foot door is equipped with a movable post which has an automatic locking arrangement at the top and is substantially fastened at the bottom when the door is in a closed position. This post wedges between the side plate of the car and the sill and gives the necessary support to the upper portion of the car.

Another door exhibited is designed for cars with a steel superstructure with wooden sheathing on the inside. In this case a T-iron door track is riveted to the Z-bar side plate on the car and double rollered hangers are arranged to operate on this track. The double rollers prevent the lifting of the door, making it easy of operation. The Z-bar at the top edge of the door works in conjunction with the T-iron track.

FLEXIBLE METALLIC HOSE.

Among the new exhibitors at this convention is the Goodyear Tire and Rubber Company, Akron, O., which has recently decided to manufacture all classes of mechanical rubber goods. One of the most interesting new features shown is a flexible metallic hose designed for air, pneumatic tool, steam, water, wash-out and all conditions where high service duty is required. The armoring consists of compound wires made of high carbon wire effectively galvanized, which completely protects the inner hose. The inner hose is made of high tensile strength and quality material adaptable for the particular service desired. The unique feature of this hose is its great flexibility. The question of expansion, contraction, elongation and twisting or writhing is thoroughly controlled. The armor is designed to withstand severe crushing strains and has been given the trade name of Kantkink.

STEAM HOSE COUPLER.

An improved form of hose coupler is being shown at the conventions by the Consolidated Car Heating Company, Albany, N. Y. The angle of the hose nipple is such as to prevent the hose from kinking, and at the same time the lines of the cams are so formed that when two couplers are connected, a perfect joint is secured without depending on the stiffness or kinking of the hose to hold the coupler heads in place. A guide is provided which acts as a hinge when coupling, and by its use the vertical travel is reduced to a minimum, thereby saving the kinking of the hose. The gasket and gasket holder are of a one-piece form, and are combined in such a manner as to give full protection to the gasket and at the same time to facilitate the changing of gaskets. The locking device of this coupler is automatic and is arranged to work whether the connecting coupler is of the same or a different form.

STERILIZING WATER COOLERS.

The United States Government now requires that the water coolers used in passenger cars be disinfected by sterilizing with steam every seven days. This requires, in yards where a large number of cars are handled, the laying of a great deal of pipe, with frequent branches leading out to hose connections through which the steam is conveyed to the coolers, the whole requiring a large expenditure. In order to provide a simple means for performing this work, the West Disinfecting Company, New York, has developed a portable steam generator, which can readily be moved from car to car by one man. It consists of a blow stove or burner using kerosene oil and mounted on a frame below a small boiler, which generates steam at from three to five pounds pressure per square inch. The steam is taken from the top of the boiler through a copper pipe, on the same principle as the dry pipe in a locomotive boiler, and is led directly through the flame of the burner in order to superheat it and provide against undue condensation; it then passes through a valve to a hose in the hands of the operator. A bracket and clamp are provided on the frame to hold the coolers and by using a longer hose the coolers which are only accessible through the car roof are easily reached.

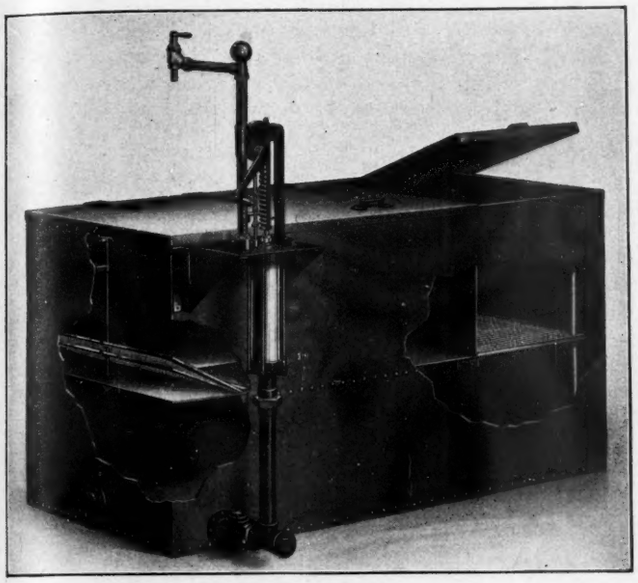
WASTE SOAKING TANKS.

Among the new appliances being exhibited by S. F. Bowser & Company, Fort Wayne, Ind., is a specially designed tank for soaking waste in oil without wasting any of the surplus oil. This tank is built of heavy galvanized steel and consists of three compartments, one for storing oil, one for soaking the dry waste and the third for storing the drained oil after the waste has been soaked.

Dry waste is put in the compartment designed for this purpose and is then covered with oil pumped from the storage compartment by a Bowser hand pump. When the waste

has soaked a sufficient length of time, a valve is opened and the extra oil is allowed to drain back into the third compartment. The oil has to pass through two screens, one of ¼ in. mesh and the other of 1/16 in. mesh. These prevent any lint, dirt, etc., being carried along with the oil. They can be readily removed for cleaning. The waste screening compartment has a special galvanized wire screen on the bottom so that any waste thrown in will quickly drain out; this is in case it is desired to use a little waste while the rest is soaking.

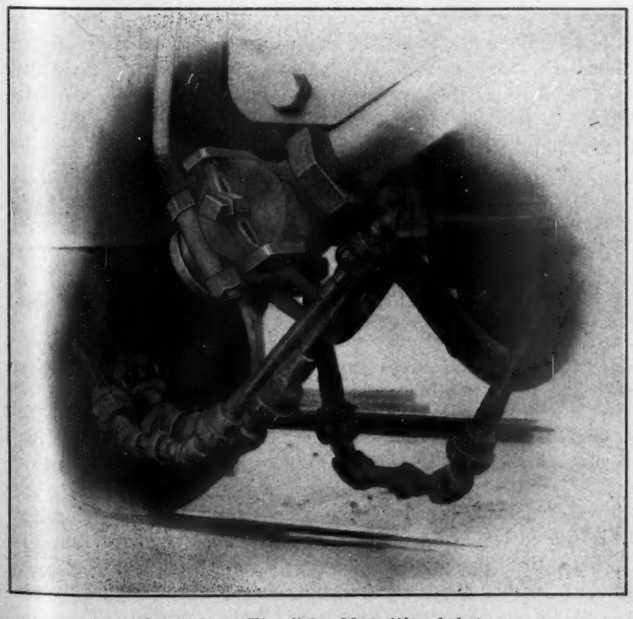
This tank has a 3½ in. clean out opening and the partition may be left out between the two upper compartments if desired and the whole upper compartment can be made oil tight. The storage compartment for oil will hold approximately 230 gal. and the dry waste compartment will hold 200 lbs. of waste. The oil soaked waste compartment will hold 100 lbs. of waste.



Waste Soaking Tank.

FLEXIBLE METALLIC CONNECTORS.

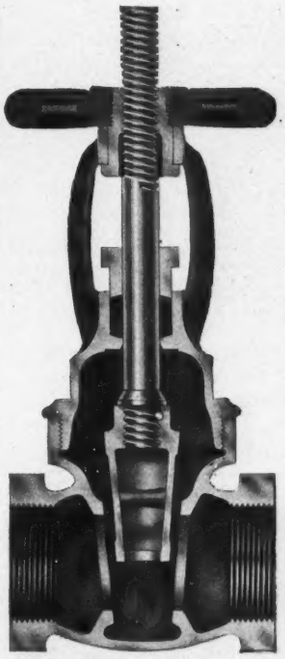
The flexible metallic connection which is shown in the illustration is intended for conveying steam, air, oil or water under any pressure common in railway practice, and is made by the Greenlaw Manufacturing Company, Boston, Mass. It is claimed for this connector that the only repairs necessary in normal use are the occasional renewal of the gasket, and as this does not contain rubber it is not affected by the action of heat or oil. The connectors are made in sizes ranging from ¾ in. upward and are used for pipe connections between locomotive and tender and between cars, and particularly in electric lighting systems where steam has to be supplied to the generating unit. Between the locomotive and tender a union is used, making it possible to disconnect the two joints without unnecessary delay when cutting off the tender. These connectors are also much used in engine houses for blowing off locomotives, etc., and for the heating of passenger cars in terminal yards.



Greenlaw Flexible Metallic Joint.

BRASS GATE VALVE.

Jenkins Brothers, New York, are exhibiting a brass gate valve which is similar to their inside screw type with the exception that a yoke and traveling spindle are substituted for the usual bonnet and inside screw; in many cases the outside screw type is more suitable than the inside. The threads on the spindle being exposed are easily lubricated, which increases their durability, particularly when the valve is used in dry or superheated steam. The traveling spindle, which raises or lowers through a stationary hand wheel as the valve is opened or closed, turns an indicator by means of which the position of the wedge or gate is readily ascertained. The valve has a solid double-faced metal wedge or gate, and the wedge is guided by ribs cast on the inside of the body which fit in corresponding channels in the wedge, thereby preventing the latter from dragging across the seat. There is a difference in thickness between the ribs on the two sides of the body, and as each channel in the wedge fits its corresponding rib it is impossible to reverse the wedge in the valve.



Brass Gate Valve.

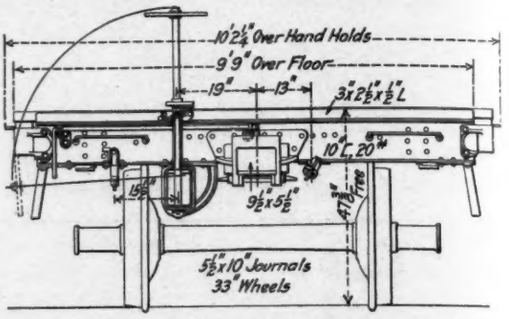
UNIVERSAL WINDOW WEATHER STRIPPING.

The McCord Manufacturing Company reports some very interesting service given by wooden sash, equipped with its universal weather stripping on steel cars. During the recent floods in Ohio several cars were in a railroad shop for revarnishing, and all windows except those equipped with these fixtures were removed. The cars stood under water for about five days, and were found with mud about 6 in. deep on the floor and 1½ in. deep on the window sills. As the locks had been removed from these window sash, they were blocked open for about 3 or 4 in. On entering the car after the flood had subsided it was found that the windows could be raised by one hand even though the wood work was considerably warped. This is explained by the comparatively large lateral play between the sash and the window post. That these windows were air and dirt proof was shown by an air test a short time before the flood. An air pressure of 90 lbs. was applied at the joints without affecting a lighted match on the inside of the window. The reason these sash were not removed

when the car was being varnished is because they are provided with a brass wearing strip, called a cinder deflector, which bears on the outside metal stop, and does not wear into the wooden sash.

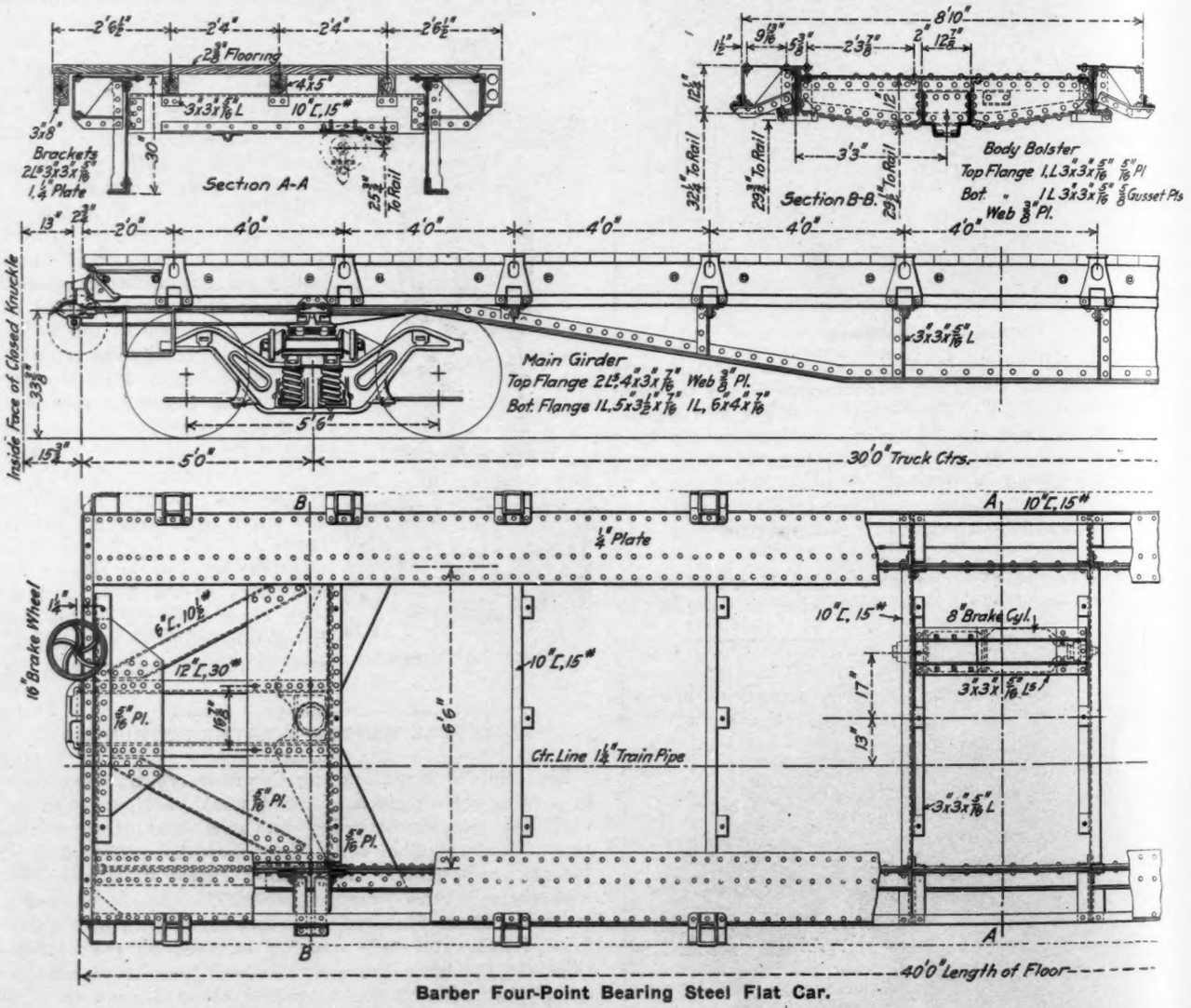
FOUR-POINT BEARING FLAT CAR.

A new design of the Barber four-point bearing flat car is being exhibited by the Standard Car Truck Company, Chicago, on the Philadelphia & Reading tracks near the pier. The car, as shown in the illustration, is especially designed for the Barber double action truck, and so that the load is delivered directly through the sills to the four bearings which are directly over the center line of the journals and half way between the journals of each truck. The radial travel is taken care of by special anti-friction devices, and the lateral motion is of the well known Barber type. There are two main drop girder sills which form a box section with the auxiliary side sill, all substantially connected with cross bearers. The end construction is a specially strong unit made up of end sill, body bolster, tie plates, braces and draft sills. The stake pockets are flush, being made of cast steel and secured to the main sills through the cover plate of the box section.



End View of Barber Four-Point Bearing Steel Flat Car.

The truck side frames are of cast steel I-beam drop girder type. The truck springs are arranged in pairs, each side supported on a seat cast solid with the truck frames. The truck bolsters are rolled I-beams with the web of the beam placed horizontal. The center pivot in place of center plate provides for and takes care of the switching shocks. It is, of course, understood that there is no vertical load on this center pivot. The roller caps are of malleable iron and are secured to the under side of the bolster. The radial roller seats are cast steel secured on upper side of the bolster. The radial roller cap is also of steel. The three parts of the radial device are so arranged that they are interlocked into one member with freedom to move with the curving of the truck or car body.



Barber Four-Point Bearing Steel Flat Car.

The car on exhibition represents the latest design, and contains many improvements over that shown last year. It has been in service for about one year, and has carried a load of 165,000 lbs., although its rated capacity is 100,000 lbs. The car weighs 36,500 lbs.

ACME DIAPHRAGM ATTACHMENT.

Acme Diaphragm Attachment.

The Acme Supply Company, Chicago, is exhibiting its latest method of attaching the end diaphragm to a car. This attachment consists of three pieces of 1 in. x 5/8 in. x 1/8 in. rolled angles, two for the legs and one for the arch or top. The diaphragm is first riveted or stapled to the attachment, which in turn is fastened to the car with nine slotted lag screws provided with spring cotters such as is shown in the illustration. Two of these screws are located in each leg and five across the top. With the old method of attaching diaphragms to the car, it is impossible to release the diaphragm at the lower end of the legs without removing a large number of screws. Damage is done to the diaphragm in many instances when the men in the yards do not take the time to do this when repairing buffer springs; they sometimes put a jack screw back of the buffer plate and screw out so far that it tears the diaphragm and renders it useless. By removing four of the spring corners, in the new diaphragm, two in each leg, the diaphragm may be swung out to any required angle, the five screws in the top piece being sufficient to sustain the weight of the diaphragm.

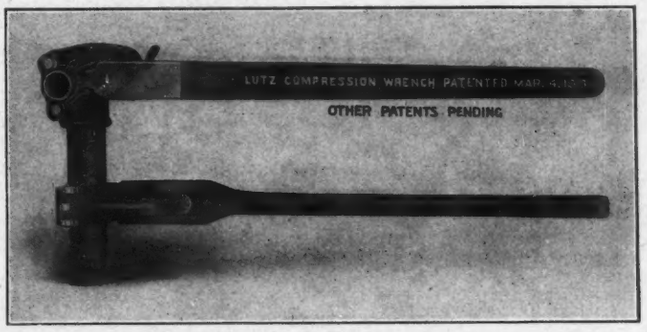
HIGH CAPACITY TRUCK.

A new type of heavy capacity truck, designed for 70-ton freight cars, is being exhibited by the Bettendorf Company, Bettendorf, Iowa. It has been so designed that the height of the center plate and side frames has not exceeded that of the truck of less capacity, although the strength of the structure has been increased throughout. The main feature of the truck lies in the manner of applying the load on the side frames which is at points near the journal boxes, rather than at the center of the side frame. This reduces the stresses in the frames and permits the introduction of larger ends on the bolster, and at the same time provides for the application of longer springs than could otherwise be employed.

The manner of guiding the bolster is accomplished by providing slots in the ends of the bolster, both forward and behind the columns, through which the carrier bars pass and rest on the trunnions on the spring caps, thereby forming the support for the bolster and locking the side frames securely in position as well as dispensing with the ordinary spring plank. In designing this truck, care has been taken to produce one having the necessary flexibility, ease of dismantling for changing wheels, as well as having ample strength with a reduction in the number of parts. The truck illustrated has 6 in. x 11 in. journals; a 5 ft. 6 in. wheel base; a clearance of 5 5/8 in. above the rail; an over-all height of side frame of 30 3/4 in.; springs 11 in. high and a bolster 12 in. deep at the ends.

COMPRESSION WRENCH.

An interesting type of wrench is being shown by the Lutz-Webster Engineering Company, Incorporated, Philadelphia. This is intended for use on pipe, studs, bolts, etc., and it is claimed gives a positive hold that will not slip even on a polished rod. While the grip is sufficiently firm to prevent the wrench slipping, it is also claimed by the maker that the wrench will not injure the surface in any way, and that it can be used directly on the thread of a pipe or stud and on brass or nickel plated pipe without causing any injury. Its construction and method of operation are clearly shown in the photograph. This company also makes a friction ratchet which can be set up without the handle in position, thereby eliminating the overbalancing effect. It is possible to operate this ratchet with a movement at the handle of as little as 1/2 in. which will be recognized as an advantage when working in a limited space.

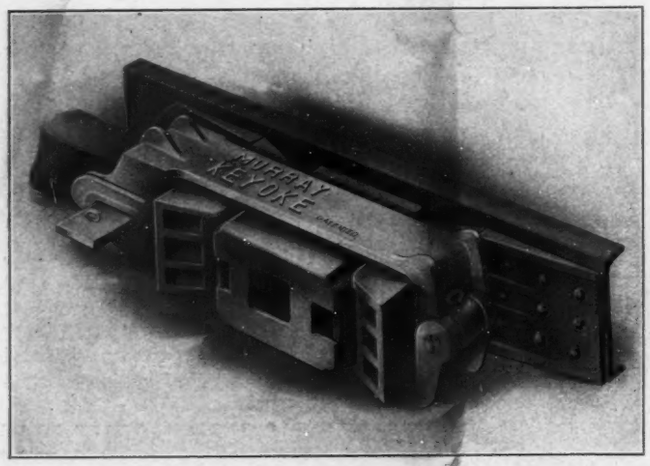


Lutz Compression Wrench.

Bettendorf Truck for 70-Ton Freight Cars.

KEYOKE DRAFT GEAR ATTACHMENT.

The Murray cast steel Keyoke, which is on exhibition in Booth 321, is, it is claimed, the only keyed draft gear attachment by which the pull is transmitted from the yoke direct to the coupler lugs instead of being taken on the key. This avoids elongation of the slots in the sills, yokes and couplers, and the wear on the keys. In addition to the yoke shown in the illustration, this company is also exhibiting a cast steel yoke which does not require a coupler key or rivets but locks below



Cast Steel Keyoke and Assembled Draft Gear.

the coupler; this device incorporates the feature of taking the pull on the coupler lugs. The manufacturer states that in a recent test it was demonstrated that these yokes will stand a pull of 474,000 lbs. before breaking, and in an M. C. B. coupler jerk test seven couplers were destroyed before the yoke was fractured. This device is manufactured by the Keyoke Railway Equipment Company, Chicago, Ill.

EXTENSION CAR STEP.

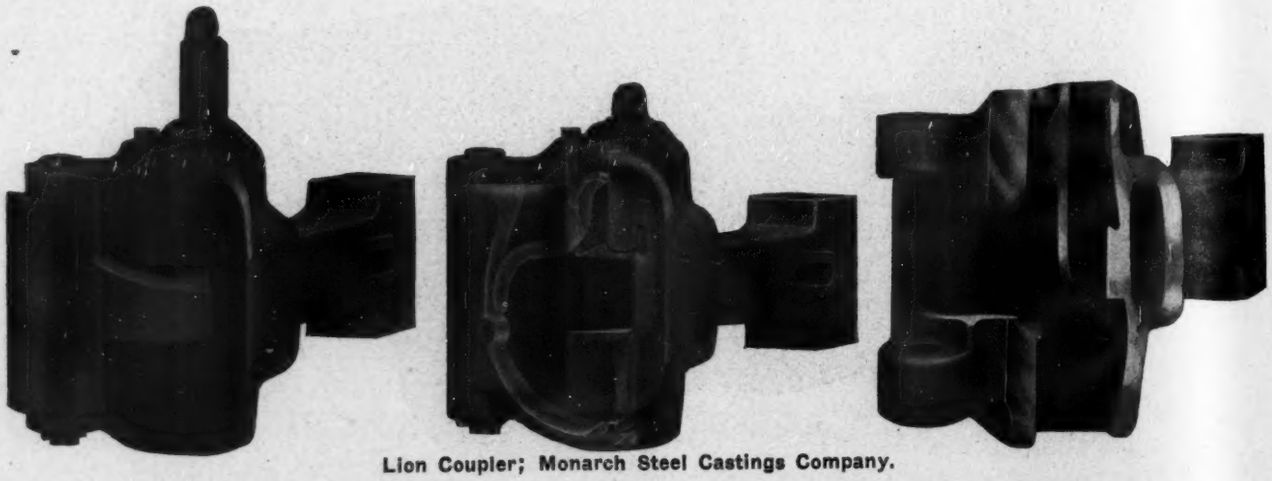
While there have been many attempts to design an extension car step which can be lowered and take the place of the usual stool, when passengers are alighting, and be raised up under the bottom permanent step while the train is in motion, the arrangement being exhibited by the Crofut Extension Car Step Company, Scranton, Pa., appears to answer the requirements without introducing the objections that have appeared in many of the earlier designs. It consists of a full width step carried by two heavy round bars which extend along the inside of the step timbers under the other steps, each having a sliding support in two brackets. Between the ends of each of these rods and the top bracket is a coiled spring around the rod which holds the step in the raised position. A connection at the center of the step to an arm on a cross shaft near the top forces it down when the lever at the side is drawn out. Notches in this lever hold the step down against the compression of the springs. Releasing the lever allows it to again assume the raised position. A connection is made to the trap door so that the step is automatically released when the trap is closed.

STREET LOCOMOTIVE STOKERS.

The reason of the general interest in mechanical stokers is easily understood when the illustrations in a pamphlet being distributed by the Locomotive Stoker Company, New York, are examined. These show seven different classes of locomotives that are now being successfully operated by Street Stokers, and an inspection of the list of dimensions given on the facing pages makes it clear that they are beyond the range for proper hand-firing. Three of them are of the Mallet type weighing from 540,000 lbs. to 405,000 lbs., and four are Mikados weighing from 330,000 lbs. to 273,500 lbs. The Street Stoker shown in operation on the pier includes a number of improvements over the design exhibited last year. These, however, are mostly of a minor nature and the principle of operation has not been changed in any way.

LION FREIGHT COUPLER.

To meet the exacting demands of modern freight service, the Monarch Steel Castings Company, Detroit, Mich., has placed on the market a new coupler known as the Lion. It is being shown in this company's exhibit, and a number of advantages are claimed for it. The construction is such that without additional parts the coupler may be operated either as a top or bottom lift, and all the working parts are protected by a housing on the bottom of the coupler head, which furnishes an additional wall connecting the face of the coupler to the shank. The strength of the shank is also increased by a rib located between the side walls and connecting the top and bottom walls, as well as extending into the head 1½ in. beyond the coupler horn. The lock is made in a solid piece, and has a bearing of 6 in. on both the knuckle tail and the wall on the guard arm side of the coupler. The knuckle opener, which is of the bell crank type, is designed to engage the knuckle as near as possible to its trunnion and thereby decrease the power necessary to start the knuckle open; the opener also follows the knuckle during the full opening. The lock-set is so designed that it is claimed the lock cannot be jarred off and allowed to drop. The construction of the coupler is clearly shown in the illustration.



Lion Coupler; Monarch Steel Castings Company.